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LIBRARY OF USEFUL KNOWLEDGE.

ON THE

VALUE OF ANNUITIES

AND

REVERSIONARY PAYMENTS,

WITH

NUMEROUS TABLES.

BY

DAVID JONES,

ACTUARY TO THE UNIVERSAL LIFE ASSURANCE OFFICE.

UNDER THE SUPERINTENDENCE OF THE SOCIETY FOR THE DIFFUSION OF USEFUL KNOWLEDGE.

VOLUME I.

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PREFACE.

The numerous transactions which take place connected with the sale of Annuities and Reversions, render a knowledge of the principles on which their values are calculated extremely desirable.

This treatise is intended to give the student an opportunity of acquiring a knowledge by no means superficial of the method of calculating Annuities and Reversions, whether dependent on a fixed number of years, or the uncertain tenure of human life.

The First Part, which refers to Annuities and Reversions not dependent on life, contains algebraical solutions of the different cases, with the rules in words and with examples for illustration. The Algebraical Formulæ, and practical examples and illustrations, are afterwards given separately at the end.

The Second Part contains the method of finding the values of Annuities and Reversions dependent on the existence of one or more lives, with a brief account at the end of the different Insurance Offices in London. To avoid misconception on the part of the public, or the charge of partiality on the part of any of the offices noticed, it must be observed that the accounts are mere abstracts of the prospectuses issued by the offices, and the length or brevity of the notices is by no means to be considered as a standard of recommendation; for it will be found, on inquiry, that the established offices of respectability in general afford all the solid advantages offered by those recently established.

A variety of Tables will be found at the end of the First and Second Parts.

In the part which treats of Life Contingencies resort has been had to Mr. Griffith Davies's Method of constructing Tables of the Values of Annuities, published by him in a small tract in 1825, and a variety of formulæ have been deduced therefrom of considerable utility in working numerous cases connected with Life Annuities and Assurances.

The advantage of this method is the use which is made of the elements employed in the calculation, and which are given under the designation of Columns D, N, M, S, and R, for single lives, and Columns D and N for two joint lives for the Carlisle rate of mortality. Similar tables are given for single and joint lives by the Northampton rate of mortality at 3 per cent interest.

It affords the Author great pleasure to acknowledge here the liberality of Messrs. Davies and Milne in giving permission to use their respective works to assist in the objects of this publication. From Mr. Milne's work have been taken the values of Annuities by the Carlisle table for single lives, and at 5 and 6 per cent for joint lives. Mr. Davies's work has furnished the rates of premiums for two lives by the Northampton, the values of policies by the same mortality, &c.

The values for two joint lives by the Carlisle 3 per cent were kindly furnished by Mr. Ansell, Actuary to the Atlas Office, and for two joint lives by the Northampton 3 per cent by Mr. Ingall, Actuary to the Imperial. For the D and N columns by the Northampton 3 per cent, the author has to express his thanks to Mr. Keys, Secretary to the Guardian Assurance Office.

It may be here remarked, that all the tables which have been constructed for this work have been done independently by two separate computers, and the results afterwards carefully compared. The tables for joint lives by the Carlisle rate of mortality at 3½, 4½, 5, and 6, per cent have the values interpolated for those ages where the difference is not some multiple of 5. The difficulty of guarding against every source of error in such a multiplicity of operations has always been felt by the author, but he trusts that the care which has been bestowed on the tables has been such as to render them entitled to confidence.

For valuable assistance in the construction of the various tables computed expressly for this work, the Author is indebted to his brother, Mr. Jenkin Jones, Actuary to the National Mercantile Assurance Office, and to Mr. David Jones, at present engaged in the service of the Poor Law Commission.

Those who are not intimately acquainted with Algebra will find it convenient to possess the Treatise on Arithmetic and Algebra published by the Society, and frequently referred to in the present work.

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EXPLANATION OF THE CONSTRUCTION AND USE OF THE TABLES IN PART I.

By means of Table I., the decimal parts of a pound, corresponding to any number of shillings, pence, and farthings, may be found by inspection.

Table II. shows the decimal parts of a year corresponding to any number of days, by means of which, when the rate for a whole year is given, the proportionate part for any number of days is easily found.

Example. A borrows a sum, for the loan of which he is to pay simple interest at the rate of £74 6 10 per annum, but wishing at the expiration of 27 days to repay the amount, it is required to know what sum he must pay for interest?

By Table I., £74 6 10=74.34166
which multiplied by the number opposite 27 days in Table II., viz. . . . } .0739726

gives 5.499=£5 10, the interest required.

Table III. shows the amount of £1 in any number of years, and is constructed by multiplying the amount of £1 in one year by itself, which gives the amount of £1 in two years; this again multiplied by the amount of £1 in one year, gives the amount at the end of three years; and so on for any number of years.

At 4 per cent the amount of £1 in one year is 1.04
this multiplied by 1.04

gives 1.0816 =
the amount of £1 at the end of two years.

1.0816 × 1.04 = 1.124864 = the amount of £1 at the end of three years.

Again, 1.124864 × 1.04 = 1.16985856 = the amount of £1 at the end of four years.

By means of this table the amount of any sum in a given number of years may be found by multiplying the amount of £1 in the given time, by the sum of which the amount is required.

Example. To find the amount of £56 in 18 years at 3½ per cent compound interest, we look in the table under 3½ per cent opposite to 18 years, and there find 1.85748920, which, multiplied by 56, gives 104.018=£104 0 4, the amount required.

Table IV. is constructed by dividing unity by the corresponding number in Table III: thus, to find the number corresponding to the present value of £1 to be received at the end of 16 years at 5 per cent compound interest, we find in Table III., under column 5 per cent opposite to 16 years, 2.18287459; then $\frac{1}{2.18287459} = .45811152$, the present value given in Table IV.

By the assistance of this table we may find the present value of any sum by multiplying the present value of £1 by the sum, the present value of which is required.

Example. To find the present value of £120 to be received at the end of 9 years, allowing 5 per cent compound interest, we find under 5 per cent opposite to 9 years

.64460892
which multiplied by 120

gives 77.353 =£77 7 1, the present value required.

Table V. is constructed by subtracting unity from the corresponding number in Table III, and then dividing by the annual interest of £1.

Example. The amount of £1 per annum in 15 years at 5 per cent compound interest is thus found: opposite to 15 years in Table III., under column 5 per cent, we find 2.07892818, which diminished by unity gives 1.07892818; this divided by .05 gives 21.578564, which is the number found in Table V.

This table enables us to find the amount of any annuity by multiplying the amount in the table by the annuity of which it is required to find the amount.

Example. A has to pay B £30 per annum for a lease for 20 years, but proposes in lieu thereof to pay him a fixed sum at the expiration of that term; what sum should be received so as to allow him 5 per cent interest?

In Table V., opposite to 20 years in column 5 per cent we have

33.065954
which multiplied by 30

gives 991.979=£991 19 7 the sum to be received.

Table VI. is constructed by subtracting the number in Table IV. from unity, and dividing by the annual interest of £1.

In Table IV., under 5 per cent opposite to 11 years we find .58467929, which subtracted from unity leaves .41532071; this divided by .05, gives 8.306414, the present value of £1 per annum for 11 years at 5 per cent.

To find the present value of any annuity we multiply the value given in the table corresponding to the sum and rate by the annuity of which the present value is required.

Example. The present value of an annuity of £50 for 18 years at

4 per cent is found by extracting from the column headed 4 per cent, opposite to 8 years, the number

12.65929
which multiplied by 50

gives 632.965=£632 19 4, the value required.

Table VII. is constructed by dividing unity by the corresponding number in Table VI.; thus, in Table VI. at 5 per cent for ten years, the present value of £1 per annum is 7.721735, and $\frac{1}{7.721735} =$ .129505, the annuity at the same rate, and for a similar term which £1 may purchase.

Multiplying the number in this table by any given sum, we find the annuity which that sum will purchase.

Example. Under column 3 per cent opposite to 20 years, we have

.067215
which multiplied by 500

will give 33.608=£33 12 2, the annuity which may be purchased for £500 for 20 years at 3 per cent.

Table VIII. shows the logarithm corresponding to the number in Table IV., the utility of which will be sufficiently obvious to those who are acquainted with the nature and use of logarithms.

EXPLANATION OF THE CONSTRUCTION AND USE OF THE TABLES IN PART II.

The principal tables in this work being deduced from the Carlisle and Northampton Tables of Mortality, the following extracts are from the works of Dr. Price and Mr. Milne, explaining the materials from which they were formed.

(Northampton Table, Dr. Price, 7th edition, pp. 95 and 105.)

In this town, containing four parishes, namely, All-Saints', St. Giles', St. Sepulchre's, and St. Peter's, an account has been kept, ever since the year 1741, of the number of males and females that have been christened and buried (Dissenters included) in the whole town. And in the parish of All-Saints, containing the greatest part of the town, an account has been kept, ever since 1735, of the ages at which all have died there.

In 1746, an account was taken of the number of houses and inhabitants in the town; the number of houses was found to be 1083, and the number of inhabitants 5136. In the parishes of All-Saints and St. Giles, the number of male and female heads of families, servants, lodgers, and children were particularly distinguished—the Heads of families were 707 males and 846 females; Children, males, 624, females, 759; Servants, males, 203, females, 280. In St. Peter's, males, 99; females, 129. In St. Sepulchre's, adults, 689; children, 477. In the last parish sexes were not distinguished.

The christenings and burials in the whole town for forty years, from 1741 to 1780, have been as follows:—

$$\text{Christened}\ \left\{\begin{array}{ll}\text{Males}\ . & 3218\\ \text{Females} & 3108\end{array}\right\}\ 6326.\quad \text{Annual medium } 158.$$

$$\text{Buried}\ .\ \left\{\begin{array}{ll}\text{Males}\ . & 3757\\ \text{Females} & 3823\end{array}\right\}\ 7580.\quad \text{Annual medium } 189\tfrac{1}{2}.$$

In the parish of All-Saints, from 1735 to 1780, or 46 years,—

$$\text{Christened}\ \left\{\begin{array}{ll}\text{Males}\ . & 2152\\ \text{Females} & 2068\end{array}\right\}\ 4220.\quad \text{Annual medium } 91\tfrac{3}{4}.$$

$$\text{Buried}\ .\ \left\{\begin{array}{ll}\text{Males}\ . & 2377\\ \text{Females} & 2312\end{array}\right\}\ 4689.\quad \text{Annual medium } 102.$$

Of these died,

Under 2 years of age			. .	1529
Between	2	and 5	. .	362
,,	5	,, 10	. .	201
,,	10	,, 20	. .	189
,,	20	,, 30	. .	373
,,	30	,, 40	. .	329
,,	40	,, 50	. .	365
,,	50	,, 60	. .	384
,,	60	,, 70	. .	378
,,	70	,, 80	. .	358
,,	80	,, 90	. .	199
,,	90	,, 100	. .	22
		Total	.	4689

From this account it appears that at Northampton, though more males are born than females, and nearly the same number die, yet the number of living females is greater than the number of males, in the proportion of 2301 to 1770, or 39 to 30. This cannot be accounted for without supposing that males are more short-lived than females. One obvious reason of this fact is, that males are more subject to untimely deaths, by accidents of various kinds, and also, in general, more addicted to the excesses and irregularities which shorten life. But this is by no means the only reason; for it should be observed at Northampton the number of female children was, in 1746, greater than the number of male children, in the proportion of 759 to 624. The greater mortality of males, therefore, takes place among children.

CARLISLE TABLE.

On the Carlisle Table of Mortality, Milne, article 704.

The following four tables, marked A, B, C, and D, have been deduced from a quarto tract, published at Carlisle in 1797, entitled, "An Abridgment of Observations on the Bills of Mortality in Carlisle, from the year 1779 to the year 1787 inclusive," and also "A Catalogue of Cumberland Animals; by John Heysham, M. D."

TABLE A.

Exhibiting the Population of the Parishes of St. Mary and St. Cuthbert, Carlisl
in 1780 and 1787.

Between the Ages of	In the year 1780 in the City and		Total in both Parishes in		Increase during these 8 Years.
	Suburbs.	Villages.	Jan. 1780.	Dec. 1787.	
0 & 5	859	170	1029	1164	135
5 .. 10	731	177	908	1026	118
10 .. 15	587	128	715	808	93
15 .. 20	543	132	675	763	88
20 .. 30	1030	298	1328	1501	173
30 .. 40	733	144	877	991	114
40 .. 50	729	129	858	970	112
50 .. 60	498	90	588	665	77
60 .. 70	375	63	438	494	56
70 .. 80	164	27	191	216	25
80 .. 90	44	14	58	66	8
90 .. 100	5	5	10	11	1
100 .. 105	1	1	2	2	..
Total	6299	1378	7677	8677	1000
Males	2817	674	3491	3864	373
Females	3482	704	4186	4813	627

TABLE B.

1780.	Husbands.	Wives.	Widowers.	Widows.	Total.
Within the walls	531	569	46	248	1394
Suburbs . . .	488	522	45	160	1215
Villages . . .	188	191	17	68	464
Total . .	1207	1282	108	476	3073

TABLE C.

Showing the Number of Deaths that took place in each interval of Age in the same Two Parishes during Nine Years, beginning with 1779, and ending with 1787.

	Bachelors.	Husbands.	Widowers.	Males.	Both Males & Fem.	Females	Widows.	Wives.	Maids.
Under 1 month				76	135	59			
Between 1 & 2				22	39	17			
2 3				10	22	12			
3 6				36	72	36			
6 9				28	51	23			
9 12				38	71	33			
Under 1 year				210	390	180			
Between 1 & 2				89	173	84			
2 3				63	128	65			
3 4				31	70	39			
4 5				24	51	27			
5 10				42	89	47			
10 15				16	34	18			
15 20				24	44	20			
				499	979	480			
Between 20 &30	20	17	..	37	96	59	2	22	35
30 40	10	35	1	46	89	43	6	30	7
40 50	6	40	3	49	118	69	11	44	14
50 60	8	37	5	50	103	53	16	35	2
60 70	3	64	16	83	173	90	45	35	10
70 80	8	41	17	66	152	86	52	23	11
80 90	5	14	23	42	98	56	49	4	3
90 100	2	4	2	8	28	20	15	2	3
100 105	..	1	..	1	4	3	3	..	..
Totals	62	253	67	881	1840	959	199	195	85

TABLE D.

Register of the Baptisms and Burials in the Parishes of St. Mary and St. Cuthbert, Carlisle, from Dr. Heysham's Observations.

Year.	Baptisms.				Burials.				Excess of Baptisms.
	Males.	Females	Total.	Dissenters.	Males.	Females.		Total.	
1779	102	109	211	*	133	125		258	—47
1780	132	120	252	*	108	117		225	27
1781	136	130	266	*	103	101		204	62
1782	118	139	257	38	84	122		206	51
1783	139	123	262	35	85	96		181	81
1784	121	153	274	36	73	85		158	116
1785	148	119	267	28	94	110		204	63
1786	123	103	226	43	100	105		205	61
1787	145	122	267	51	101	98		199	68
TOTAL	1164	1118	2282	231	881	959		1840	442
1788	144	118	262	44	81	106		187	75
1789	131	109	240	53	107	106		213	27
1790	107	118	225	49	105	130		235	—10
1791	129	127	256	67	171	173		344	—88
1792	148	137	285	54	109	117		226	59
1793	141	139	280	48	107	109		216	64
1794	145	134	279	39	129	130		259	20
1795	144	122	266	30	131	157		288	—22
1796	147	149	296	39	141	132		273	23
					Parish Churches.	Wreay Chapel.	Quakers.		
1797	.	.	.	.	†279	3	2	284	
1798	.	.	.	.	192	1	2	195	
1799	.	.	.	.	170	1	5	176	
1800	.	.	.	.	316	0	2	318	
1801	.	.	.	.	228	1	7	230	
1802	.	.	.	.	243	1	1	245	
1803	.	.	.	.	236	1	4	241	
1804	.	.	.	.	279	2	6	287	
1805	.	.	.	.	205	0	3	208	
1806	.	.	.	.	285	5	8	298	
1807	.	.	.	.	336	3	6	345	
1808	.	.	.	.	312	4	5	321	
1809	.	.	.	.	..	..	..	374	
1810	.	.	.	.	..	..	..	303	
						Total		7912	

* The baptisms of Dissenters are included in the other columns, but were no obtained separately for the first three years.

† After 1796 the sexes of the dead are not distinguished.

TABLE E.

Register of the Marriages, Baptisms, and Burials, in the same Two Parishes, from the Population Abstracts of 1801 and 1811.

Year.	Marriages.	Baptisms.			Burials.		
		Males.	Females	Total.	Males.	Females	Total.
1780	37	107	102	209	108	115	223
1781	70	115	110	225	102	95	197
1782	66	97	123	220	85	120	205
1783	56	116	106	222	82	95	177
1784	68	104	126	230	73	81	154
1785	97	132	101	233	93	102	195
1786	70	100	85	185	104	107	211
1787	57	114	94	208	99	97	196
1788	71	118	96	214	80	100	180
1789	75	106	78	184	107	103	210
1790	80	89	93	182	99	127	226
1791	82	101	85	186	166	169	335
1792	95	121	107	228	104	111	215
1793	95	113	115	228	104	109	213
1794	66	118	120	238	123	131	254
1795	85	135	102	237	129	151	280
1796	82	78	129	207	140	133	273
1797	81	151	144	295	120	156	276
1798	85	125	118	243	92	100	192
1799	78	119	137	256	79	91	170
1800	82	124	108	232	154	164	318
1801	85	141	128	269	109	119	228
1802	138	153	135	288	111	132	243
1803	133	182	176	358	105	119	224
1804	101	175	172	347	138	139	277
1805	108	164	156	320	104	100	204
1806	116	171	155	326	147	137	284
1807	135	208	204	412	158	178	336
1808	137	180	173	353	146	155	301
1809	91	217	192	409	155	210	365
1810	146	199	179	378	147	148	295
Total	2768	4173	3949	8122	3563	3894	7457

Table C. is printed in the form which appeared best adapted to convey the intended information: the forms of the others are some of them exactly, and the rest very nearly, those in which Dr. Heysham gave them.

The numbers of the annual burials, in Table D, from 1797 to 1810, both years inclusive, the same gentleman has been so kind as to furnish me with, for the purpose of this work, after examining all the registers with the greatest attention, assisted by the clergyman also, for the three following years:—

	Number of Burials.		
	Males.	Females.	Both.
1811	127	132	259
1812	160	178	338
1813	188	189	377

Table E. is added from the returns to Parliament, under the Population Act, partly because it contains the marriages, which Dr. Heysham has not given, and, partly, to prove the accuracy of that gentleman's observations. It may also be of use in showing (as far as two parishes only can furnish the means of doing so) what dependence is to be placed upon the accuracy of the returns of Government.

By these two Tables (D and E) it will be found that, in the 17 years ending with 1796, there were

	Baptisms.			Burials.		
According to	Males.	Females.	Both.	Males.	Females.	Both.
Dr. Heysham . .	2298	2162	4460	1829	1994	3823
Govt. returns . .	1864	1772	3636	1798	1946	3744
Omissions in latter	434	390	824	31	48	79

And in 31 years, ending with 1810, the total number of burials in these two parishes was, according to

Dr. Heysham	7654
The Returns to Parliament . . .	7457
Amount of deficiencies on the latter	197

From the baptisms of Dissenters, which are given separately in Dr. Heysham's Table (D) for 15 years, ending with 1796, it appears that the defects in the number of baptisms returned to Government have arisen principally from the omission of these.

The Doctor has also favoured me with separate statements of the burials in the township or chapelry of Wreay, and those of the Quakers, for 12 years, ending with 1808, by which it will be seen that these two form part of the omissions in the returns of Parliament.

USE AND CONSTRUCTION OF TABLES.

Table I. shows out of a certain number born how many live to attain each year of age, and forms the basis of every description of calculation connected with the subject of Life Contingencies.

Table II. shows the expectation of life deduced from the various rates of mortality, or, in other words, the average number of years that one individual taken with another may expect to enjoy at the different ages of existence.

Table III. is similar in description to Table I.

In Table V. the first column shows the proportion to unity that die at each year of age, and is formed by dividing the number in Table I., in the column of decrements, by the number at the same age in the column of the number of living: the second column is found by subtracting from unity the quantity in the first column; and the third column is obtained by dividing unity by the number in the second column, or by dividing the number in the column of living, at any given age, by the number in the same column at the next older age. At the age of 20, $\frac{72}{5132} = .014030$ the number in the first column, $1 - .014030 = .985070$ the number in the second column, and $\frac{1}{.985070}$ or $\frac{5132}{5060} =$ 1.01432, the number in the third column.

In Table VI. the number at any age in column D is found by multiplying the present value of £1 due at the end of as many years as the age by the number of persons, according to the table, living at that age.

In Table IV., Part I., at 3 per cent, the present value of £1, due at the end of 30 years, is .41198676; and by Table I., Part II., the number living at the age of 30, by the Northampton table of mortality, is 4385: the product of the two is the number in the table in column D, viz., 1806.562.

Column N is formed by taking the number in column D, at the oldest age in the table, and adding to it the number of the oldest age but one, then to this sum adding the number at the oldest age but two, and so on throughout the table.

.0585 = No. in column N at age 95 and D at 96.
.2413 = ,, D ,, 95
.2998 = ,, N ,, 94
.5591 = ,, D ,, 94
.8589 = ,, N ,, 93

Column S is formed from column N, in a manner similar to that in which column N is formed from column D.

.0585	No. in column	S	at age 95
.2998	,,	N	,, 94
.3583	,,	S	,, 94
.8589	,,	N	,, 93
1.217	,,	S	,, 93

The construction of columns M and R are somewhat too intricate to be explained verbally; an example for the Carlisle 4 per cent is given in Art. 192.

Table VII. shows the number of years' purchase which should be given for an annuity according to the Northampton table of mortality at the various rates per cent; the values given in the table being multiplied by any annuity will show the value of that annuity.

Example. The value of an annuity of £40, during the existence of a life aged 45, at 4 per cent, is thus found: opposite to age 45, under column 4 per cent, is 12.2835, which multiplied by 40, gives 491.340, the value required.

The values in this table are obtained by means of D and N columns, such as are given in Table VI., the number in column N being divided by the number in column D to find the value of the annuity. As an example,—the value of £1 per annum, at 3 per cent, on a life aged 29, is found by dividing 32376.615, the number in column N at that age, by 1892.585, the number in column D, which gives 17.1070 the value of the annuity.

Table VIII. shows, in a similar manner, the value of an annuity payable until the failure of the joint existence of two lives, and is constructed in a similar manner from columns D and N in Table XXXIII.

Table IX. shows the present value, according to the Northampton table, of £1 to be received at the end of the year in which the existence of a life shall fail: thus, at 5 per cent, at the age of 40, the present value of a reversion of £1 is .38871, this, multiplied by 100, gives 38.871, the value of £100 to be secured at the end of the year in which a life aged 40 shall fail.

The Table is constructed by subtracting the present value of £1 due at the end of one year from unity, and multiplying the difference by the value of the annuity given in Table VII., increased by unity, and subtracting the result thus obtained from unity: thus, to find the value at 5 per cent on a life aged 40, we find in Table IV., Part I., the present value of £1 due at the end of one year, at 5 per cent, is .952381, which, taken from unity, leaves .047619, and the value of the annuity in Table VII., at the age of 40, under column 5 per cent, increased by unity, is 12.837: then, .047619 × 12.837 = .61129, which, taken from unity, leaves .38871, the value in the Table.

Tables XI. to XVIII. are similar to Table VI.

Table XIX. is similar to Table VII.

Table XXI. is similar to Table VIII.

Table XXII. is similar to Table IX.

Table XXIII. is similar to Table VIII.

Table XXIV. is constructed from the Carlisle in a similar manner to Table V. from the Northampton.

Table XXVI. is formed from Table XL. in the following manner:—to the number in column D at the ages of A and B add the number in column N at ages one year younger than A, and the age of B; from the sum subtract the number in column N at the age of A and one year younger than A, and divide the difference by double the number in column D, at the age of A and B.

Example. To find the probability of a life aged 10, dying before a life aged 60:

To the number at the ages of 10 and 60 in column D, viz.,	23533780
Add the number in column N at ages 9 and 60, viz., .	308095739
	331629519
From the sum subtract the number in column N, ages 10 and 59	327354967
leaves	4274552

which, divided by 47067560, gives .0908, the required probability.

Column D in Table XXVII. is found by multiplying the number in column D at the older age in Table XI. by the number of living at the younger age: thus, to find the number in column D at the ages of 10 and 15, we multiply 4043.730, the number in column D at age 15, by 6460, the number living at the age of 15 according to the Carlisle mortality in Table I., which gives 26122497.6, the number in column D at the ages of 10 and 15, under difference of age 5 years.

Column N is formed from column D in precisely the same manner as in Table VI.

Tables XXVIII. to XXXIII. are formed in a similar manner.

Tables XXXVI. to XXXVIII. show the single and annual premiums for different assurances on two lives, the construction being somewhat too intricate to be explained here.

Table XXXIX. shows the value of a policy of £100 according to the Northampton 'rate of mortality after it has been in force any number of years, the original premium being assumed to have been charged according to the same table of mortality and rate of interest; it is constructed in the following manner: divide the value of the annuity increased by unity at the age when the policy is valued by the value of the annuity increased by unity at the age when the assurance was effected, subtract the quotient from unity, and multiply by 100. Or,

To the annual premium for assuring £1 at the age when the policy was taken out, add .029126, and add the same quantity to the annual premium for assurance of £1 at the age when the policy is valued; divide the former sum by the latter, subtract the quotient from unity, and multiply by 100.

By this last method a policy may be valued from the published rates of an office when the rate of interest used is 3 per cent.

To find the value of a policy taken out on a life aged 30, after having been in existence 6 years: by Table VII. the value of the annuity at age 30 is 16.9217, and at age 36 it is 15.7288.

$$\frac{16.7288}{17.9217} = .93344,$$

$1 - .93344 = .06656$, which multiplied by 100 gives 6.656, the value required.

By Table IX. the annual premium at age 30 is .026672, and at age 36 it is .030651, then $.026672 + .029126 = .055798$, and

$.030651 + .029126 = .059777$, and $\frac{.055798}{.059777} = .93344$, as before.

ON THE

VALUE OF ANNUITIES,

&c.

SIMPLE INTEREST

1. **Is the** sum paid for the use of the *principal only*, during the whole term of the loan, and varies (when the rate is the same) with the time, and the value of the loan; thus, the interest of £100 for one year, at 4 per cent per annum, is £4; the interest of the same sum for two years, is £8; the interest of *twice* the sum (£200) for one year is £8, and for two years £16.

2. The sum of principal and interest in any given time is called the *amount;* thus, in one year, the amount of £100 at 4 per cent is £100 + 4 = £104.

3. To obtain general rules for the solution of cases in Simple Interest, let us make

s = the amount,
p = the principal,
n = the number of years,
i = the interest of £1 for one year expressed in decimal parts of a pound.

4. To find (s) the amount.

Multiplying i the interest of £1 for one year by p, we obtain ip the interest of £p for the same period; this multiplied again by n, gives inp, the interest of £p for n years.

$$\therefore s = p + inp = p\,(1 + in) = \text{the amount.}$$

The following is the rule expressed in words: "Multiply the interest of £1 for one year by the number of years, add *one* to the product, and multiply the sum by the principal."

5. *Example.* A agrees to lend B the sum of £537 12 6 for 5 years, at an annual interest of 4 per cent; what sum must B pay at the expiration of that *period for principal* and interest?

Here $p =$ *537.625, $i = .04$ $n = 5$

$$\begin{array}{rrr}
 & .04 & 537.625 \\
 & \underline{5} & \underline{1.2} \\
in = & .2 & 645.1500 = \pounds 645\ 3\ 0 \\
 & \underline{1.} & \\
1 + in = & 1.2 &
\end{array}$$

6. To find (p) the principal—

(by Art. 4.) $s = p\,(1 + in)$

dividing each side of this equation by $1 + in$

$$p = \frac{s}{1 + in}$$

Rule. Multiply the interest of £1 for one year by the number of years, add one to the product, and divide the *amount* by the sum.

Example. B returns A £645 3 0 principal and interest, for the loan of a sum for 5 years at 4 per cent; what was the sum advanced?

$$\begin{array}{rrr}
s = 645.15 & n = 5 & i = .04 \\
 & .04 & \\
 & \underline{5} & \\
in = & .2 & \\
 & \underline{1.} & \\
1 + in = & 1.2)\ 645.15 & \\
\dfrac{s}{1 + in} = & 537.625 = \pounds 537\ 12\ 6 &
\end{array}$$

7. To find (n) the number of years,

(by Art. 4) $s = p + inp$

(*Arithmetic and Alg.*, 109) by transposition, $inp = s - p$

dividing each side by ip, $n = \dfrac{s - p}{ip}$.

Rule. Multiply the *interest* of £1 for one year by the *principal*, and divide the difference between the *principal* and the *amount*, by the product.

Example. In how many years will £537 12 6 amount to £645 3 0 at 4 per cent simple interest?

$$\begin{array}{rrr}
p = 537.625 & s = 645.15 & i = .04 \\
 & 537.625 & 645.15 \\
 & \underline{.04} & \underline{537.625} \\
ip = & 21.50500) & 107.525(5 \text{ years} \\
 & & \underline{107\ 525} \\
 & & \ldots\ \ldots
\end{array}$$

---

* The decimal parts of a pound corresponding to any number of shillings and pence may be found by referring to Table 1.

8. **To find (i) the rate of interest,**

$$\text{(by Art. 7)} \qquad inp = s - p$$

$$\text{dividing each side by } np, \; i = \frac{s - p}{np}.$$

Rule. Divide the difference between the *principal* and *amount*, by the product of the principal and number of years, which will give the interest of £1; this result, multiplied by 100, will produce the rate per cent.

Example. At what rate per cent, simple interest, will £537 12 6 amount to £645 3 in 5 years?

$$\begin{array}{rcrcr}
p = 537.625 & & s = 645.15 & & n = 5 \\
5 & & 537.625 & & \\
\hline
2688.125 &) & 107.525 & (& .04 \\
 & & 107.525 & & 100 \\
\hline
 & & \ldots\;\ldots & & 4 \text{ per cent.}
\end{array}$$

9. When the time is any number of years and days, or of days alone, the quantity n contains a fraction, the decimal corresponding to which may be found by Table 2; if it were required to find the amount of £300 in 3 years and 73 days at 5 per cent, we find by the Table the decimal of a year corresponding to 73 days $= .2$.

$$\begin{array}{rrr}
n = 3.2 & p = 300 & i = .05 \\
 & 3.2 & \\
 & .05 & \\
\hline
in = & .160 & \\
 & 1. & \\
\hline
1 + in = & 1.16 & \\
 & 300 & \\
\hline
p\,(1 + in) = & £348 & \text{Answer.}
\end{array}$$

In many works on this subject, tables of the interest of £1 for any number of days are given: it is not thought necessary to insert them here, on account of the great facility with which they may be computed by the aid of Table 2: as an example, let it be required to find the interest of £1 for 20 days at 5 per cent per annum; opposite 20 days in the Table is .05479452, this multiplied by .05 will give .002739726 the interest of £1 for the required time.

DISCOUNT,

10. Is an allowance made for the payment of a sum of money before it becomes due.

The present value is the sum to be paid after deducting the discount.

Call d = the discount,
p = the present value,
s = the sum due,
n = the number of years,
i = the interest of £1 for one year.

11. **To find (p) the *present value*—**

When money due at the expiration of a certain period is discharged by the payment of an immediate sum, the party making it ought not to pay the whole sum, but that portion of it only, which put out at interest, will amount at the expiration of the period to the sum due; for instance, £100 paid down when interest is 5 per cent, is equivalent to the payment of £105 at the expiration of a year.

Finding the present value is therefore precisely the same case as that solved in Art. 6, and as p the present value in this case corresponds with p the principal in the former, s the sum due with s the amount, the notation for the time and rate being the same, we have by Art. 6,

$$p = \frac{s}{1 + in}$$

$$\text{(Art. 4.)} \qquad s = p\,(1 + in)$$

$$\text{(Art. 7.)} \qquad n = \frac{s - p}{ip}.$$

The rules given in Articles 5, 6, 7, and 8, apply equally here, if we substitute the words present value, and sum due, for principal and amount.

12. To find (d) the discount—

This is found by taking the difference between the present value and the sum due.

$$d = s - p = s - \frac{s}{1 + in}.$$

Example. What discount should be allowed for the present payment of a bill of £325, due at the end of 3 months, interest 5 per cent?

$$\begin{array}{rrrl}
s = \ \ 325 & n = \tfrac{3}{12} = .25 & & i = .05 \\
& \underline{.05} & & \\
& .0125 = in & & \\
& \underline{1} & & \ \ 325 \\
& 1 + in = 1.0125) & 325 & (\underline{320.988} = \frac{s}{1+in} \\
& \ldots & \underline{30375} & \\
& & 2125 & \ \ 4.012 = \pounds 4\ \ 0\ \ 3 \\
& & \underline{20250} & \qquad\qquad \text{discount.} \\
& & 1000 & \\
& & \underline{911} & \\
& & .89 & \\
& & \underline{81} & \\
& & 8 &
\end{array}$$

The above is the true mode of finding the discount, but in the mercantile world it is customary to take for the discount the interest of the sum for the time that elapses till it becomes due, by which mode more than the true discount is obtained.

The formula for finding the interest by Art. 4, is ins, and therefore *the discount received* above the true discount is

$$ins - \frac{ins}{1 + in} = \frac{i^2 n^2 s}{1 + in}.$$

In the example given above, 4.0625 = £4 1 3 is the sum that a banker would receive for discounting the same bill at the above rate of interest.

ON ANNUITIES AT SIMPLE INTEREST.

13. An *annuity* is a periodical income arising from lands, houses, money lent, pensions, &c.

When the possession of an annuity is not to be entered upon until the expiration of a certain period, it is called a *reversionary* or *deferred* annuity; when the time of possession is not deferred, the annuity is sometimes called *immediate*, but in general it is simply termed an annuity.

At the time of acquiring the title to an annuity the party is said to enter on possession; one of the equal intervals at which the annuity is payable, is always supposed to elapse between the time of entering on possession and the first payment of the annuity.

14. The amount of an annuity in a given time is the sum of all the payments with their interest from the time of becoming due, until the expiration of the term.

Make s = the amount of the annuity,
a = the annuity,
n = the number of years,
i = the interest of £1 for one year;

then if the annuity be £1 per annum forborne n years, the last or nth payment being received at the time it falls due, there is no interest on it, the amount therefore is £1 only; the last payment but one, on which one year's interest is due, amounts to $1 + i$; the last but two, on which two years' interest is due, amounts to $1 + 2i$; the last but three to $1 + 3i$; and so on till we come to the first payment, which being payable at the *end* of the first year, has $(n - 1)$ year's interest due thereon, and amounts to $1 + (n - 1)i$; the following series is therefore the amount of an annuity of £1 in n years:

$$1 + (1 + i) + (1 + 2i) + (1 + 3i) + (1 + 4i) + \ldots\ldots$$
$$+ \{1 + (n - 3)i\} + \{1 + (n - 2)i\} + \{1 + (n - 1)i.\}$$

This series, in which the difference between each term and the next succeeding is the same throughout, is termed an Arithmetical progression, for the summation of which, a general formula with its investigation is given in Art. 143 of the "Treatise on Arithmetic and Algebra" published by the Society. The formula there is

$$s = \frac{n(2a + (n - 1)b)}{2},$$

s denoting the sum of the series, n the number of terms, a the fir and b the common difference; applying this to the above series · n terms in both, $a = 1$, $b = i$; the sum therefore is expressec formula

$$\frac{n\,(2 + (n - 1)\,i)}{2} = n + \frac{n\,(n - 1)\,i}{2},$$

and this multiplied by a gives

$s = a\,(n + \frac{n\,(n - 1)}{2}\,i)$ = the amount of an annuity of n years.

Rule. Multiply the number of years by the number of ye one, and by the interest of £1 for one year; to the half of this add the number of years, and multiply the sum by the annuity.

Example. What is the amount of an annuity of £325 for years, at 3½ per cent simple interest?

$$\begin{array}{rlll} n = & 12 & a = 325 & i = .0 \\ n - 1 = & \underline{11} & & \\ n\,(n - 1) = & 132 & & \\ i = & \underline{.035} & & \\ & 660 & & \\ & \underline{396} & & \\ & 2)\underline{4.620} & & \\ \frac{n.(n-1).i}{2} = & 2.310 & & \\ n = & \underline{12} & & \\ n + \frac{n.(n-1).i}{2} = & 14.310 & & \\ a = & \underline{325} & & \\ & 71550 & & \\ & 28620 & & \\ & \underline{42930} & & \end{array}$$

$a\left(n + \frac{n.(n-1)\,i}{2}\right) = 4650.750$ = £4650 15 0 the amount.

15. To find (a) the annuity, the amount, &c. being given,

$$\text{(Art. 14.)} \qquad s = a\left(n + \frac{n\,(n - 1)}{2}\,.\,i\right)$$

multiply each side of the equation by 2, then

$$2\,s = a\,(2\,n + n\,(n - 1).\,i)$$

dividing each side by $2\,n + n\,(n - 1)\,.\,i$ we have

$$a = \frac{2\,s}{2\,n + n\,(n - 1)\,i}.$$

Rule. Multiply the number of years by the number of ye *one, and by the interest* of £1 for one year; to this product ad the number of years, and by the sum divide twice the *amount* of the annuity.

Example. What annuity forborne 12 years will amount to £4650 15 0 at $3\frac{1}{2}$ per cent simple interest?

$$\begin{array}{rll}
s = 4650.75 \qquad n = & 12 & \qquad i = .035 \\
n - 1 = & \underline{11} & \\
n.(n-1) = & 132 & \\
i = & \underline{.035} & \\
 & 660 & \\
 & \underline{396} & \\
n(n-1)\,i = & 4.620 & \quad 4650.75 \\
2n = & \underline{24} & \quad \underline{2} \qquad \pounds \\
2n + n(n-1)\,i = & 28.62\;) & \quad 9301.50\;(\;325 \\
 & & \quad \underline{8586} \\
 & & \quad 7155 \\
 & & \quad \underline{5724} \\
 & & \quad 14310 \\
 & & \quad \underline{14310} \\
 & & \quad \ldots\ldots
\end{array}$$

16. To find (n) the number of years, the rest being given,

$$\text{(Art. 15.)} \qquad 2s = a\,(2n + n\,(n-1)\,i)$$

divide each side by a, we have

$$\frac{2s}{a} = 2n + n\,(n-1)\,i = in^2 + 2n - in = in^2 + n\,(2-i)$$

dividing by i, $\qquad n^2 + \frac{2-i}{i}\,n = \frac{2s}{ai},$

adding $\left(\frac{2-i}{2i}\right)^2$ to each side to complete the square (*Arithmetic and Algebra*, 206).

$$n^2 + \frac{2-i}{i}\,n + \left(\frac{2-i}{2i}\right)^2 = \frac{2s}{ai} + \frac{(2-i)^2}{4i^2}$$

$$= \frac{8i\frac{s}{a} + (2-i)^2}{4i^2},$$

extracting the square root of each side:

$$n + \frac{2-i}{2i} = \frac{\sqrt{8i\frac{s}{a} + (2-i)}}{2i}$$

by transposition,

$$n = \frac{\sqrt{8i\frac{s}{a} + (2-i)^2}. - (2-i)}{2i}$$

Rule. Divide the *amount* by the *annuity*, and multiply the quotient by 8 times the interest of £1 for one year; add to this the square of the difference between 2, and the interest of £1 for a year, and extract the square root of the sum; from this result subtract the difference between 2 and the interest of £1 for a year, and divide by twice the interest of £1 for one year.

Example. How many years must an annuity of £325 be forborne to amount at 3½ per cent simple interest to £4650 15 0?

$$a = 325 \qquad \begin{array}{r} i = .035 \\ 8 \\ \hline 8i = .280 \end{array} \qquad s = 4650.75$$

$$\begin{array}{l} 325)\,4650.75\,(\,14.31 = \frac{s}{a} \\ \quad \begin{array}{r} 325 \\ \hline 1400 \\ 1300 \\ \hline 1007 \\ 975 \\ \hline .325 \\ 325 \\ \hline \end{array} \qquad \begin{array}{r} .28 = 8i \\ \hline 11448 \\ 2862 \\ \hline 4.0068 = 8i\frac{s}{a} \end{array} \end{array}$$

$$\begin{array}{r} 2. \\ .035 \\ \hline 1.965 = 2 - i \\ 1.965 \\ \hline 9825 \\ 11790 \\ 17685 \\ 1965 \\ \hline (2 - i)^2 = 3.861225 \\ 8i\frac{s}{a} = 4.0068 \\ \hline \end{array} \qquad \begin{array}{r} .035 \\ 2 \\ \hline .07 = 2i \end{array}$$

$$8\,\frac{s}{a} + (2 - i)^2 \quad 7.868025\,(2.805 = \sqrt{8i\frac{s}{a} + (2 - i)^2}$$

$$\begin{array}{r} 4. \\ \hline 48)386 \\ 384 \\ \hline 5605)\;28025 \\ 28025 \\ \hline \cdots\cdot \end{array} \qquad \begin{array}{l} 1.965 = 2 - i \\ \hline .07)\,.840 = \sqrt{8i\frac{s}{a} + (2-i)^2} - (2 - i) \\ \hline \quad 12 \text{ years} \end{array}$$

17. To find (i) the rate of interest.

$$(\text{Art. } 16.)\ \frac{2s}{a} = 2n + n(n - 1)\,i$$

Arith. and Alg., 109. By transposition

$$n(n-1)i = \frac{2s}{a} - 2n = 2\left(\frac{s}{a} - n\right)$$

dividing each side by $n\ (n-1)$

$$i = \frac{2\left(\frac{s}{a} - n\right)}{n\ (n-1)}$$

Rule. Divide the *amount* by the *annuity*, subtract the number of years from the quotient, and multiply the difference by 2; then divide by the product of the number of years, multiplied by the number less one.

Example. At what rate per cent simple interest will an annuity of £325 amount in 12 years to £4650 15 0?

$$s = 4650.75 \qquad a = 325 \qquad n = 12$$

$$\begin{array}{lll}
325)4650.75\ (\ 14.31 = \frac{s}{a} & & 12 = n \\
\underline{325} \qquad\quad \underline{12.} & & \underline{11} = n - 1 \\
1400 \quad \frac{s}{a} - n = 2.31 & & n\,(n-1) = 132\ 4.62(.035 \times 100 \\
\underline{1300} \qquad\qquad \underline{\ \ 2} & & \underline{396} = 3.5 \text{ per cent.} \\
1007 \qquad 4.62 = 2\left(\frac{s}{a} - n\right) & & 660 \\
\underline{975} & & \underline{660} \\
325 & & \ldots \\
325 & &
\end{array}$$

18. If we wish to obtain the present value of an annuity, it can be done by finding the present value of each payment separately, and the sum of these several values will be the present value of the annuity.

If we suppose the annuity to be £1 per annum for n years, the expression for the present value will be by Art. 6,

$$\frac{1}{1+i} + \frac{1}{1+2i} + \frac{1}{1+3i} + \frac{1}{1+4i} + \ldots\ldots$$

$$+ \frac{1}{1+(n-2)i} + \frac{1}{1+(n-1)i} + \frac{1}{1+in}.$$

For the summation of this series no general formula has yet been discovered, and when the annuity whose present value is to be found, is for a long term of years, the computation becomes tedious; it may, however, in most cases, be considerably abridged by the assistance of Barlow's Mathematical Tables, in which are given the reciprocals of all numbers from 1 to 10,000; for instance, if it were required to find the present value of an annuity of £50 for 6 years, at 3½ per cent simple interest,

$$\frac{1}{1+i} = \frac{1}{1.035} = .966184$$

$$\frac{1}{1+2i} = \frac{1}{1.07} = .934579$$

$$\frac{1}{1+3i} = \frac{1}{1.105} = .904977$$

$$\frac{1}{1+4i} = \frac{1}{1.14} = .877193$$

$$\frac{1}{1+5i} = \frac{1}{1.175} = .851064$$

$$\frac{1}{1+6i} = \frac{1}{1.21} = .826446$$

$$\begin{array}{r} \hline 5.360443 = \left\{\begin{array}{c}\text{present value of an annuity of £1}\\ \text{for 6 years}\end{array}\right. \\ 50 \\ \hline 268.02215 = \text{ditto} \quad .. \quad .. \quad .. \quad \text{£50}\end{array}$$

To mathematicians, the tables just mentioned will be found of great use, as they contain the factors, squares, cubes, square roots, cube roots, and reciprocals of all numbers from 1 to 10,000, with other tables, and an extensive collection of formulæ relating to mathematics and natural philosophy.

COMPOUND INTEREST.

19. When the interest of money, instead of being received as it becomes due, is added to the principal, increasing the sum each year on which interest is receivable, then money is said to be put out at *Compound Interest.*

If the interest of £100 at £5 per cent, instead of being taken up at the end of the first year when it becomes due, be added to the principal, a new principal of £105 is created, which with its interest amounts at the end of the second year to £110 5, this again forms a new principal amounting with interest to £115 15 3 at the end of the third year, and so on for any longer period.

Make s = the amount
p = the principal
n = the number of years
i = the interest of £1 for one year;

then $1 + i$ = the amount of £1 at the end of the first year, and the amount of any other sum in one year will be in the same proportion, i.e. as 1 is to 1 + i, so is any sum, to its amount, in one year; and since 1 + i forms a new principal, its amount in one year gives the amount of £1, the original principal at the end of the 2nd year.

$$\begin{array}{lll} \therefore 1 : 1+i :: 1+i : (1+i)^2 & \left\{ \begin{array}{l}\text{amount of £1 at the} \\ \text{end of the 2nd year.}\end{array}\right. \\ 1 : (1+i) :: (1+i)^2 : (1+i)^3 & \quad \text{ditto} \quad \text{3rd year.} \\ 1 : 1+i :: (1+i)^3 : (1+i)^4 & \quad \text{ditto} \quad \text{4th year.} \end{array}$$

and proceeding in the same manner the amount of £1 at the end of the n^{th} year is $(1+i)^n$; this multiplied by p gives

$$s = p(1+i)^n = \text{the amount of £}p \text{ in } n \text{ years.}$$

$$\log s = \log p + n \log (1+i).$$

Rule. Raise the amount of £1 at the end of the first year, to the same power as the number of years, and multiply the result by the principal.

Example. What is the amount of £325 in 4 years at 5 per cent compound interest?

$$p = 325 \qquad n = 4 \qquad 1 + i = 1.05.$$

$$\begin{array}{r} 1.05 \\ 1.05 \\ \hline 5\ 25 \\ 105 \\ \hline 1.\ 1025 = (1.05)^2 \\ 1.\ 1025 \\ \hline 55125 \\ 22050 \\ 11025 \\ 11025 \\ \hline 1.\ 21550625 = (.105)^4 \\ 523 \\ \hline 3646518 \\ 243101 \\ 60775 \\ \hline 395.0394 = £395\ 0\ 9\tfrac{1}{2} \end{array}$$

In this example the amount of £1 in 4 years is multiplied by what is termed contracted multiplication, the rule for which may be found in (*Arithmetic and Algebra, Art.* 167).

Calculation by logarithms.

$$\text{Log } s = \log p + n \log (1+i).$$

$$\begin{array}{rl} \text{Log } (1+i) = \log 1.05 = & 0.0211893 \\ n = & 4 \\ \hline n \log (1+i) = & 0.0847572 \\ \log 325 = & 2.5118834 \\ \hline \log p + n \log (1+i) = & 2.5966406 \qquad 395{,}0394 = £395\ 0\ 9\tfrac{1}{2} \end{array}$$

Rules for logarithmic calculations may be found prefixed to nearly all the different collections of tables of logarithms, among the best and most extensive of which are Hutton's, Callet's, Taylor's, and Babbage's; latter of which will be found the best for this subject, as it contain logarithms of numbers only, and is the most correct.

Example. What sum will £349 7 6 amount to in 29 yea £3 6 8 per cent compound interest?

$$p = 349\ 7\ 6 = 349.375,\ n = 29,\ i = \frac{£3\ 6\ 8}{100} = \frac{\overset{£}{3\frac{1}{3}}}{100} = \frac{\overset{£}{10}}{300} =$$

$$1 + i = 1 + \frac{1}{30} = \frac{31}{30}$$

$$\begin{array}{rl}
\log 31 = & 1.49136169 \\
\text{co.}\log 30 = & \bar{2}.52287875\,^{*} \\
\hline
\log(1+i) = & 0.01424044 \\
n = & 29 \\
\hline
 & 12816396 \\
 & 2848088 \\
\hline
n\log(1+i) = & 0.41297276 \\
\log 349{,}375 = & 2.5432918 \\
\hline
\log p + n\log(1+i) = & 2.9562646 \qquad 904{,}200 = £904
\end{array}$$

20. In Table 3 are given the amounts of £1 for any numb years not exceeding 100 at the rates of 2. 2½. 3. 3½. 4. 4½. 5. 6. 7. and 10 per cent from Smart's Collection of Tables, published by in 1726; when the amount is required for a greater number of than 100 multiply the amount opposite 100 by the amount opposi the number of years equal to the excess above 100; if the amou £1 in 130 years be required at 3 per cent, $(1.03)^{100} \times (1.03)$ $(1.03)^{130}$. Opposite 100 in the column headed 3 per cent we $(1.03)^{100} = 19.21863198$, and opposite 30 in the same col $(1.03)^{30} = 2{,}42726247$, therefore $(1.03)^{130} = 19.21863198 \times 2.4272$ $= 46.64866412$, the amount of £1 in 130 years. As an exam the use of the tables—

What is the amount of £325 in 4 years at 5 per cent comp interest?

In 5 per cent column opposite 4 years we find

$$\begin{array}{rl}
(1.05)^4 = & 1.215506 \\
 & 523 = p \text{ inverted} \\
\hline
 & 3.646518 \\
 & 243101 \\
 & 60775 \\
\hline
 & 395{,}0394 = £395\ 0\ 9\tfrac{1}{2}
\end{array}$$

---

* The logarithm the reciprocal of any quantity is equal to the logarithm o quantity taken from the logarithm of unity, which is 0. In the present instan logarithm of $\frac{1}{30}$ being -1.47712125, in order to have the decimal positiv *have* $-1.47712125 = -2 + (2 - 1.47712125) = \bar{2}.52287875$.

As the excess of the amount at the end of the term above the original principal arises from the interest of money, we have this rule:—"From the amount at the end of the term, subtract the original principal, and the difference is equal to the interest."

21. To find (p) the principal, the rest being given.

$$\text{By art. 19, } s = p\,(1+i)^n$$

dividing each side by $(1+i)^n$

$$p = \frac{s}{(1+i)^n} = s\,(1+i)^{-n}$$

Rule. Divide the given amount by the amount of £1 in the same term.

Example. What principal will amount to £395,0394 in 4 years at 5 per cent compound interest?

$s = 395.0394$, $(1+i) = 1.05$, $n=4$, by table 3, $(1.05)^4 = 1.215506$

$$\begin{array}{r} 1.215506)395.0394(325 \\ \underline{3646518} \\ 303876 \\ \underline{243101} \\ 60775 \\ \underline{60775} \\ \cdots\cdots \end{array}$$

This example is computed by contracted division, which cuts off one figure at each step from the divisor instead of annexing to the dividend.

By logarithms.

$$\text{Art. 19, } \log s = p + n \times \log(1+i)$$

$$\text{By transposition } \log p = \log s - n \times \log(1+i)$$

$$\begin{array}{rl} -\log 1.05 = & \bar{1}.9788107 \\ & \underline{4} \\ -n\log(1+i) = & \bar{1}.9152428 \\ \log s = & \underline{2.5966406} \\ \log p = & 2.5118834 \quad £325 \end{array}$$

22. To find (n) the number of years, the rest being given.

To obtain this we must use the logarithmic formula

$$\text{(Art. 19) } \log. s = \log p + n \log.(1+i)$$

$$\text{By transposition } \quad n \log(1+i) = \log s - \log p$$

dividing each side by $\log(1+i)$

$$n = \frac{\log s - \log p}{\log(1+i)}$$

Rule. Find the difference between the logarithms of the amount and of the principal, and divide by the logarithm of the amount of £1 in one year.

Example. In how many years will £325 amount to £395.0394 at 5 per cent compound interest?

$$s = 395.0394 \qquad p = 325 \qquad 1 + i = 1.05$$

$$\begin{array}{rl}
\log 395.0394 = & 2.5966406 \\
\log 325. \quad = & \underline{2.5118834} \\
\log 1.05 = .0211893) & 0.0847572(4 \text{ years} \\
 & \underline{0847572} \\
 & \ldots\ldots
\end{array}$$

23. To find (i) the rate of interest.

$$\text{Art. 19. } s = p(1+i)^n$$

dividing each side by p $\qquad (1+i)^n = \frac{s}{p}$

Extracting the n^{th} root of each side, $1 + i = \left(\frac{s}{p}\right)^{\frac{1}{n}}$

$$\text{By transposition } i = \left(\frac{s}{p}\right)^{\frac{1}{n}} - 1$$

The readiest way of finding $\left(\frac{s}{p}\right)^{\frac{1}{n}}$ is by logarithms.

$$\log\left(\frac{s}{p}\right)^{\frac{1}{n}} = \frac{\log s - \log p}{n}$$

Rule. Divide the difference between the logarithms of the *principal* and of the *amount*, by the number of years, and from the number corresponding to the quotient subtract one, the result is the interest of £1; this multiplied by 100 gives the rate per cent.

Example. At what rate per cent will £325 amount at compound interest to £395.0394 in 4 years?

$$\begin{array}{rrl}
n = 4 & s = 395.0394 & p = 325 \\
 & \log s = 2.5966406 & \\
 & \log p = \underline{2.5118834} & \\
 & 4)\overline{0.0847572} & \\
\frac{\log s - \log p}{n} = & 0.0211893 & 1.05 \\
 & & \underline{1} \\
 & & .05 = i \\
 & & \underline{100} \\
 & & 5 \text{ per cent.}
\end{array}$$

24. When interest is payable half-yearly, quarterly, &c.

If the intervals at which interest is receivable be shorter than a year, and at each interval the interest be added to the principal as it becomes due, the amount at compound interest will evidently be greater than when interest is only payable yearly. £100 at 5 per cent, payable half-yearly, will amount at the end of six months to £102 10; this new principal being again put out at interest for the next six months, will give £105 1 3, the amount of £100 at the end of the year, which, if interest were payable *yearly*, would be only £105.

The interest in this case for the year is £5 1 3, from which it appears that where interest is payable at shorter intervals than a year, the expression *rate per cent*, denotes, not the interest of £100 in a year, but the sum of which the same proportion must be taken to find the rate per cent for one interval, as each interval is of a year.

Using the same notation as in art. 19, and calling m the number of intervals, we have

$\left(1+\frac{i}{m}\right)$ the amount of £1 at the end of the 1st interval; reasoning as in Art. 19 we find $\left(1+\frac{i}{m}\right)^m$ do. of £1 at the end of one year.

$\left(1+\frac{i}{m}\right)^{mn}$ do. £1 .. .. .. n years.

multiplying by p

$s=p\left(1+\frac{i}{m}\right)^{mn}$ do. £p .. .. .. n years.

$$\text{by logarithms, } \log s=\log p+mn\times\log\left(1+\frac{i}{m}\right).$$

Rule. Find the amount of £1 at the end of the first interval, and raise it to a power equal to the product of the number of years and of intervals at which interest is payable in the year, and then multiply by the principal.

Example. What will be the amount of £325 1 9 in 25 years at 4 per cent compound interest payable half-yearly?

$$p=325.0875,\ i=.04,\ n=25,\ m=2,\ \therefore\ mn=50$$

and the formula becomes $325.0875\times(1.02)^{50}$.

by art. 19, $(1.02)^{50}=$ amount of £1 in 50 years at 2 per cent, payable yearly.

Table 3, $(1.02)^{50}=2.69158803$

5780.523

8074764
538318
134579
2153
188
13

875,0015 ≐ £875 0 0¼

By logarithms.

$$\begin{array}{ll} \log\ 1.02 & = 0.008600171 \\ & \qquad\qquad\quad 50 = mn \\ \hline \log(1.02)^{50} = & 0.43000855 \\ \log p & = 2.5120004 \\ \hline \log s & = 2.9420090 \quad 875{,}001 \text{ as before.} \end{array}$$

A person invests £5000 in the 3 per cent consols when stocks are 90: what will this sum amount to in 15 years, supposing the interest as it becomes due to be always invested at the same rate?

$p = 5000, i = \frac{3}{90} = \frac{1}{30}$, $n = 15$, $m = 2$, the interest in the funds being payable half-yearly. $\left(1 + \frac{i}{m}\right)^{mn} = \left(1 + \frac{1}{60}\right)^{30} = \left(\frac{61}{60}\right)^{30}$

$$\begin{array}{ll} \log 61 & = 1.785329835 \\ \log 60 & = 1.778151250 \\ \hline \log\left(1 + \frac{i}{m}\right) & = 0.007178585 \\ & \qquad\qquad\quad 30 \\ \hline \log\left(1 + \frac{i}{m}\right)^{mn} & = 0.21535755 \\ \log p & = 3.6989700 \\ \hline \log s & = 3.9143276 = 8209.706 = £8209\ 14\ 1\tfrac{1}{2} \end{array}$$

25. The fluctuations in the prices of the funds prevent us from ascertaining with precision what will be the amount of an investment with the accumulated dividends in a given time, as it is not probable that the dividends will all be invested at the original rate; it is therefore necessary, if we wish to anticipate what the amount will be, to assume a probable average rate of interest on which our calculation shall be grounded.

26. The advantage derived from the interest of money being received at more intervals than one in the year, will not be of much importance for the term of one year; but when money is put out in this way for a long time, the difference becomes more considerable. The following formula will show the difference in the amount of interest of £1 for one year.

$\left(1 + \frac{i}{m}\right)^{m} - (1+i)$: the first part of the expression being expanded by the binomial theorem (*Arith. and Alg.* 275), and the remaining part subtracted, it becomes $\frac{m-1}{2m} i^2 + \frac{m-1}{2m} \cdot \frac{m-2}{3m} i^3 + \frac{m-1}{2m} \cdot \frac{m-2}{3m} \cdot \frac{m-3}{4m} i^4 +$, &c., which, as the series converges very fast, is equal to $\frac{m-1}{2m} i^2$ nearly.

When m equals 2 the difference is $\frac{i^2}{4}$, when m equals 4 it becomes $\frac{3i^2}{8}+\frac{i^3}{16}+\frac{i^4}{256}$.

27. The greater the number of intervals at which interest is payable, the more nearly do $\frac{m-1}{m}$, $\frac{m-2}{m}$, &c. approximate to unity. If then we write the limit unity for each of these fractions, we have the amount of £1 in one year on the supposition that there is no portion of time, however small, but what produces some interest. The series then becomes $1+i+\frac{i^2}{1.2}+\frac{i^3}{1.2.3}+\frac{i^4}{1.2.3.4}+\frac{i^5}{1.2.3.4.5}$,&c., which series, as shewn by writers on logarithms, is equal to the number that has i for its Naperian logarithm, or $i \times .434294482$ for its logarithm in the common system.

Example. What will be the amount of £300 in one year at 4 per cent, compound interest payable momently?

$p=300$ $\quad i=.04$ $\quad .434294482$

$.04$

$\log\left(1+\frac{i}{m}\right)^m = .01737177928 \quad 1.04081$ $\left\{\begin{array}{l}\text{amount of £1}\\ \text{in one year.}\end{array}\right.$

300

$312.243 =$ £312 4 10.

When m is infinite, the formula $\left(1+\frac{i}{m}\right)^{mn}$ when expanded, becomes $1+in+\frac{i^2n^2}{1.2}+\frac{i^3n^3}{1.2.3}+\frac{i^4n^4}{1.2.3.4}+\frac{i^5n^5}{1.2.3.4.5},+$&c., which series is equal to the number that has in for its Naperian logarithm, or $in \times .434294482$ for its logarithm in the common system?

Example. What will be the amount of £300 in 40 years at 5 per cent compound interest payable momently?

$p=300,\ i=.04,\ n=40$

$.04$

$in = 1.6$

$.43429448$

$6.1 = in$ inverted

43429448

26057669

$\log\left(1+\frac{i}{m}\right)^{mn} = .69487117 \quad 4.95303$

300

1485.909

28. In the first of these examples the amount of £1 in one year, if interest were payable *yearly, would be 1.04*; the difference between this

and the amount of £1 in the example, is only .00081, or .243 for which is very inconsiderable; but in the latter example, the amo £1 in 40 years, interest payable yearly, is 4.80102, shewing ference of .15201 in the amount of £1 for that time, or for the s £300 a difference equal to £45,603.

29. To find (p) the principal.

$$\text{Art. 24, } s = p\left(1+\frac{i}{m}\right)^{mn}$$

dividing each side by $\left(1+\frac{i}{m}\right)^{mn}$

$$p = \frac{s}{\left(1+\frac{i}{m}\right)^{mn}}$$

by logarithms, $\log p = \log s - mn \times \log\left(1+\frac{i}{m}\right)$

Rule. Divide the given *amount* by the amount of £1 in the tir

Example. What sum will amount to £690 in 15 years at cent compound interest payable quarterly?

$$s = 690,\ n = 15,\ m = 4,\ i = .08,$$

$\left(1+\frac{i}{m}\right)^{mn} = (1.02)^{60} = 3.281031$ by Table 3, under 2 pe (Art. 24.)

3.281031)690 (210.299 = £21
. . . . 6562062
337938
9835
6562
3273
2953
320
295
25

By logarithms.

$$\log\left(1+\frac{i}{m}\right) = \log 1.02 = .00860017$$
$$60$$
$$\log\left(1+\frac{i}{m}\right)^{mn} = \log (1.02)^{60} = 0.5160102$$
$$\log p = \log 690 = 2.8388491$$
$$\log p - \log\left(1+\frac{i}{m}\right)^{mn} = 2.3228389 \quad 210.299 =$$

30. To find (n) the number of years.

(Art. 24.) $\log s = \log p + mn \times \log\left(1 + \frac{i}{m}\right)$

(Arith. and Alg. 109) by transposition, $mn.\log\left(1 + \frac{i}{m}\right) = \log s - \log p$

dividing each side by $m.\log\left(1 + \frac{i}{m}\right)$

$$n = \frac{\log s - \log p}{m \times \log\left(1 + \frac{i}{m}\right)}$$

Rule. Divide the difference of the logarithms of the principal and the amount by the logarithm of the sum to which £1 will amount at the first interval the interest is convertible, multiplied by the number of periods of conversion in the year.

Example. In how many years will £210 6 0 amount to £690 at 8 per cent compound interest payable quarterly?

$p = 210.3 \qquad s = 690 \qquad i = .08 \qquad m = 4$

$\log\left(1 + \frac{i}{m}\right) \quad .00860017$

$\qquad\qquad\qquad\qquad\quad 4$

$\log s = 2.8388491$

$\log p = 2.3228393 \qquad m.\log\left(1 + \frac{i}{m}\right) = .03440068$

```
.03440068)0.5160098(15 years
           3440068
           1720030
           1720030
           ......
```

31. To find (m) the number of periods at which interest is convertible in the year:

$$s = p\left(1 + \frac{i}{m}\right)^{mn}$$

Extracting the nth root,

$\left(1 + \frac{i}{m}\right)^m = \left(\frac{s}{p}\right)^{\frac{1}{n}}$, which equation there is no direct method of solving, but we can approximate sufficiently near by the following method:

Expanding by the binomial theorem

$$1 + i + \frac{m-1}{2m}i^2 + \frac{m-1}{2m}\cdot\frac{m-2}{3m}i^3$$

$$+ \frac{m-1}{2m}\cdot\frac{m-2}{3m}\cdot\frac{m-3}{4m}i^4 \text{ \&c.} = \left(\frac{s}{p}\right)^{\frac{1}{n}}.$$

By transposition,

$$\frac{m-1}{2m} i^2 + \frac{m-1}{2m} \cdot \frac{m-2}{3m} i^3 \text{ \&c.} = \left(\frac{s}{p}\right)^{\frac{1}{n}} - (1+i)$$

As this series converges very fast we shall be sufficiently accurate we omit all the terms but the first two; we then have the equation

$$\frac{m-1}{2m} i^2 + \frac{m-1}{2m} \cdot \frac{m-2}{3m} i^3 = \left(\frac{s}{p}\right)^{\frac{1}{n}} - (1+i)$$

Multiply by $6m^2$, and dividing by i^2

$$3m^2 - 3m + im^2 - 3im + 2i = 6m^2 \cdot \frac{\left(\frac{s}{p}\right)^{\frac{1}{n}} - (1+i)}{i^2}$$

$$m^2 \left\{3 + i - 6\, \frac{\left(\frac{s}{p}\right)^{\frac{1}{n}} - (1+i)}{i^2}\right\} - (3+3i)m = -2i.$$

This equation is a quadratic, and if we substitute for *i*, *s*, and *p* the values in figures, and solve the equation (Arith. & Alg. 206) we sha have the value of *m* very nearly.

32. To find (*i*) the rate of interest

$$\text{(Art. 24.)} \qquad s = p\left(1 + \frac{i}{m}\right)^{n}$$

dividing each side by *p*,

$$\left(1 + \frac{i}{m}\right)^{mn} = \frac{s}{p}$$

extracting the *mn*th root of each side,

$$1 + \frac{i}{m} = \left(\frac{s}{p}\right)^{\frac{1}{mn}}$$

by transposition, $\quad \frac{i}{m} = \left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1.$

Multiply each side by *m*:

$$i = m\left\{\left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1\right\}$$

$\left(\frac{s}{p}\right)^{\frac{1}{mn}}$ is found by logarithms: $\log\left(\frac{s}{p}\right)^{\frac{1}{mn}} = \frac{\log s - \log p}{mn}$.

Rule. Divide the difference between the logarithms of the *amoun* and *principal*, by the product of the number of years and of periods c conversion of interest in a year; the quotient is a logarithm; find th corresponding number, and from it subtract one, and multiply the diffe ence by the number of periods interest is convertible in a year.

Example. At what rate per cent will £210 6 0 at compound interest payable quarterly, amount to £690 in 15 years?

$p = 210.3 \qquad s = 690 \qquad n = 15 \qquad m = 4$

$$\begin{array}{r}
\log s = 2.8388491 \\
\log p = \underline{2.3228393} \\
60)\overline{0.5160098} \\
\overline{.0086002}
\end{array}
\qquad
\begin{array}{l}
1.02 = 1 + \frac{i}{4} \\
\underline{1} \\
.02 \\
\underline{4} \\
.08 = \text{interest of £1 for one year.}
\end{array}$$

$.08 \times 100 = 8$ per cent.

33. These equations might have been obtained more readily, if in the formula found when interest is convertible annually, the interest for *one interval* had been substituted for the *annual interest*, and the number of *periods of conversion* for the number of *years*: this will appear evident on examining the demonstration in Art. 19, where the amount of £1 in one year is called $(1 + i)$, and the amount of £1 in n years is shown to be $(1 + i)^n$; these expressions do not depend upon the time being reckoned in years, for by adopting the same mode of reasoning, if $(1 + i)$ represent the amount of £1 at the expiration of any other portion of time, $(1 + i)^2$ would be the amount at the expiration of twice that period, and $(1 + i)^n$ at the expiration of n times that period; in whatever way, therefore, we express the amount of £1 for a term at the end of which interest is convertible; the amount at the end of any number of the same equal periods may be found by raising that amount to the power represented by the number of periods.

When interest is convertible at m equal intervals in a year, there are mn of these intervals in n years, and the amount of £1 at the expiration of the first of them is $\left(1 + \frac{i}{m}\right)$, this raised to the mnth power, gives $\left(1 + \frac{i}{m}\right)^{mn}$, the amount at the end of n years, or mn terms.

34. When we are in possession of the proper tables, the amount of £1 may be found by looking under the rate of interest produced by dividing the annual rate of interest by the number of times interest is convertible in one year, opposite to the number of years obtained by multiplying the periods of conversion in a year by the number of years; if the annual rate of interest be 4 per cent, the amount of £30 in 12 years when interest is payable half-yearly, is obtained by looking in the Table under 2 per cent, opposite 24 years, where we find 1.60843, which multiplied by 30, gives 48.2529 = the amount; the same sum for a similar term when the annual rate is 6 per cent, payable 3 times a year, by looking under 2 per cent, opposite 36 years, where we have 2.03988, and multiplying by 30, gives 61.196 for the amount.

If we have a table *of the logarithms* of the expression $\left(1 + \frac{i}{m}\right)^{m}$

for different rates of interest, by multiplying this by the number of years, we find the logarithm of £1 in that term.

The following table gives the amounts and their logarithms of £1 in one year, payable yearly, half-yearly, quarterly, and momently, for different rates of interest, and is thus formed:

When interest is 3½ per cent, the amount payable yearly is 1.035, the logarithm of which is .0149403497, (*Hutton's Logs.*, *Table* 3); when interest is payable half-yearly we have

$$\left(1+\frac{i}{m}\right)^m=\left(1+\frac{3\frac{1}{2}}{100\times 2}\right)^2=\left(1+\frac{7}{400}\right)^2=\left(\frac{407}{400}\right)^2$$
$$=1.035306$$

$$\log\left(\frac{407}{400}\right)^2 = 2\{\log 407 - \log 400\}$$
$$=2\{2.6095944092-2.6020599913\}=\cdot 0150688358;$$

when interest is payable quarterly

$$\left(1+\frac{i}{m}\right)^m=\left(1+\frac{3\frac{1}{2}}{100\times 4}\right)^4=\left(1+\frac{7}{800}\right)^4=\left(\frac{807}{800}\right)^4$$
$$=1.035462;$$

$$\log\left(\frac{807}{800}\right)^4 = 4\{\log 807 - \log 800\}$$
$$=4\{2.9068735347-2.9030899870\}=.0151341908.$$

When interest is payable momently, we have $\cdot 035\times\cdot 4342944819 = \cdot 01520030687$ for the logarithm, the number corresponding to which is 1.035620

Nominal rate of Interest.	Payable.	Amount of £1 in one year.	Logarithms of such amount.	Nominal rate of Interest.	Payable.	Amount of £1 in one year.	Logarithms of such amount.
2 per cent.	*y*	1.020000	.0086001718	5 per cent.	*y*	1.050000	.0211892991
	h	1.020100	.0086427476		*h*	1.050625	.0214477308
	q	1.020150	.0086642470		*q*	1.050946	.0215801275
	m	1.020201	.0086858896		*m*	1.051271	.0217147241
2½ per cent.	*y*	1.025000	.0107238654	6 per cent.	*y*	1.060000	.0253058653
	h	1.025156	.0107900638		*h*	1.060900	.0256744494
	q	1.025235	.0108235735		*q*	1.061364	.0258641690
	m	1.025315	.0108573620		*m*	1.061837	.0260576689
3 per cent.	*y*	1.030000	.0128372247	7 per cent.	*y*	1.070000	.0293837777
	h	1.030225	.0129320845		*h*	1.071225	.0298806996
	q	1.030339	.0129802193		*q*	1.071859	.0301376716
	m	1.030454	.0130288345		*m*	1.072508	.0304006137
3½ per cent.	*y*	1.035000	.0149403498	8 per cent.	*y*	1.080000	.0334237555
	h	1.035306	.0150688358		*h*	1.081600	.0340666786
	q	1.035462	.0151341909		*q*	1.082432	.0344006870
	m	1.035620	.0152003069		*m*	1.083287	.0347435586
4 per cent.	*y*	1.040000	.0170333393	9 per cent.	*y*	1.090000	.0374264979
	h	1.040400	.0172003435		*y*	1.092025	.0382325809
	q	1.040604	.0172854951		*q*	1.093083	.0386532667
	m	1.040811	.0173717793		*m*	1.094175	.0390865034
4½ *per cent.*	*y*	1.045000	.0191162904	10 per cent.	*y*	1.100000	.0413926852
	h	1.045506	.0193266334		*h*	1.102500	.0423785981
	q	1.045765	.0194341385		*q*	1.103813	.0428954616
	m	1.046028	.0195432517		*m*	1.105171	.0434294482

ON THE PRESENT VALUE OF SUMS AT COMPOUND INTEREST.

35. When money is reckoned at compound interest, the sum to be given in lieu of a payment at a future period, is that which laid out at interest until the sum is due, would just provide for the payment thereof. The method of finding the present value is therefore the reverse of finding the amount. By Art. 19, we have the proportion as £1 is to its amount in one year, so is any other sum to its amount in a year, which proportion is also true when inverted. As the amount of £1 in a year is to the £1 which produced it, so is the amount of any other sum in a year to the sum which produced that amount.

Make p = the present value,
s = the sum due,
n = the number of years,
i = the interest of £1 for one year.

$(1+i) : 1 :: 1 : \frac{1}{1+i} = {}^{*}(1+i)^{-1} =$ {present value of £1 due at the end of one year.
$(1+i) : 1 :: (1+i)^{-1} : (1+i)^{-2}$ second year,
$(1+i) : 1 :: (1+i)^{-2} : (1+i)^{-3}$ third year.

Generally, $(1+i)^{-n}$ = present value of £1 due at the end of n years, which multiplied by s, will give

$$p = s\,(1+i)^{-n} = \frac{s}{(1+i)^{n}}.$$

By logarithms,

$$\log. p = -n \log (1+i) + \log s.$$

Rule. Find the amount of £1 in the given time, and by it divide the sum due.

Example. What is the present value of £350 due at the end of 10 years, 5 per cent compound interest?

$s = 350$ $n = 10$ $p = .05$

By Table 3,

$(1.05)^{10} = 1.628894$)350 (214.870 = £214 17 5
3257788
242212
162889
79323
65156
14167
13030
1137

---

* In Algebra x^{-1} means $\frac{1}{x}$, x^{-2} means $\frac{1}{x^{2}}$, &c.—(*Arith. & Alg. Art.* 216. et seq.)

By logarithms,

$$\begin{array}{rl}
\log 1.05^{-1} = & \overline{1}.9788107 \\
 & \underline{\qquad\quad 10} \\
\log 1.05^{-n} = & \overline{1}.7881070 \\
\log s = & \underline{2.5440680} \\
 & 2.3321750 = 214.870 = £214\ 17\ 5
\end{array}$$

In the expression $(1+i)^{-n}$ if i be taken $= .02$ and $n = 1, 2, 3$, &c. respectively, the several values which it represents will be expressed by the geometrical series 1.02^{-1}, 1.02^{-2}, 1.02^{-3}, &c., which numbers respectively denote the reciprocals of the amounts of £1 at 2 per cent, in 1, 2, 3, &c. years, the decimal values of which being found, furnish a table of the present values of £1 at 2 per cent; when i is equal to .025, .03, .35, &c., and the decimal values are found, the series will give the present values of £1 at 2½, 3, 3½, &c. per cent. Tables of the present values of £1 due at the expiration of any number of years not exceeding 100, were calculated by Mr. Smart at the rates of 2, 2½, 3, 3½, 4, 4½, 5, 6, 7, 8, 9, and 10 per cent, to 8 figures of decimals, and published in his valuable collection of Tables; they have been copied from thence, and given in Table 4 of this work, with the whole of the decimals, which will be found useful where great accuracy is required.

36. To find (s) the sum due,

$$\text{(Art. 35.)} \qquad p = \frac{s}{(1+i)^n}$$

Multiplying each side by $(1+i)^n$ (Arith. and Alg., 110.)

$$s = p\,(1+i)^n.$$

By logarithms, $\log s = \log p + n.\log(1+i)$

Rule. Multiply the present value by the amount of £1 in the given time.

Example. What sum will the present payment of £214.87 entitle a person to at the expiration of 10 years, compound interest 5 per cent?

$$p = 214.87 \qquad n = 10 \qquad i = \cdot 05$$

$$\begin{array}{lrl}
\text{Table 3,} \quad (1.05)^{10} = & 1.628894 & \\
 & \underline{78.412} & = p \text{ inverted} \\
 & 3257788 & \\
 & 162889 & \\
 & 65156 & \\
 & 13030 & \\
 & \underline{1140} & \\
 & 350.0003 & = £350.
\end{array}$$

By logarithms,

$$\begin{array}{rl}
\log 1.05 = & 0.0211893 \\
 & \underline{\qquad\quad 10} = n \\
\log(1.05)^{10} = & 0.2118930 \\
\log p = & \underline{2.3321750} \\
 & 2.5440680 \qquad £350
\end{array}$$

37. To find (n) the number of years,

(Art. 36.) $s = p\,(1 + i)^n$;

this equation is solved in Art. 22:

$$n = \frac{\log s - \log p}{\log\,(1 + i)}.$$

Rule. From the logarithm of the sum due, subtract the logarithm of the present value, and divide the difference by the logarithm of the amount of £1 in one year.

Example. A person at the end of a certain number of years, has to pay £350 for the renewal of a lease, but wishing to pay some time before the expiration of the term, he is allowed a discount of 5 per cent. compound interest, which reduces the payment to £214.87; how many years had the lease to run?

$s = 350 \qquad p = 214.87 \qquad i = .05$

$\log s = 2.5440680$

$\log p = 2.3321750$

$\log 1.05 = .0211893)0.2118930\,($10 years

2118930

.. ..

38. To find (i) the rate of interest:

(Art. 36.) $s = p\,(1 + i)^n$,

from which is found by the solution of that equation in Art. 23,

$$i = \left(\frac{s}{p}\right)^{\frac{1}{n}} - 1 \qquad \log\left(\frac{s}{p}\right)^{\frac{1}{n}} = \frac{\log s - \log p}{n}.$$

Rule. Divide the difference between the logarithms of the sum due and the present value by the number of years, and from the corresponding number subtract one, the result is the interest of £1; this multiplied by 100, gives the rate per cent.

Example. A debt of £350 is due from A to B, payable at the expiration of 10 years, which A is allowed to discharge by the immediate payment of £214.87; what rate per cent compound interest is allowed?

$s = 350 \qquad p = 214.87 \qquad n = 10$

$\log s = 2.5440680$

$\log p = 2.3321750$

10)0.2118930

.0211893 1.05

1

.05

100

5 per cent.

39. When interest is convertible m times a year, the amount of £1 at the first period of converson is $\left(1+\frac{i}{m}\right)$;

then $\left(1+\frac{i}{m}\right) : 1 :: 1 : \left(1+\frac{i}{m}\right)^{-1}$, the *present value* of £1 payable at the expiration of the mth part of a year, and by reasoning as in Art. 34, we obtain $\left(1+\frac{i}{m}\right)^{-m}$, the present value of £1 due at *the end of one year*, or at the end of m periods of *conversion of interest*, and $\left(1+\frac{i}{m}\right)^{-mn}$, the present value of £1 due at the end of n years, or mn periods of conversion of interest. This multiplied by s gives

$$p = s\left(1+\frac{i}{m}\right)^{-mn}, \text{ or } \frac{s}{\left(1+\frac{i}{m}\right)^{mn}}.$$

By logarithms,

$$\log p = \log s - mn \log\left(1+\frac{i}{m}\right).$$

This equation is the same as that given in Art. 29, and the expressions for s, n, m, and i, derived therefrom, as given in Arts. 28, 30, 31, and 32, furnish us with the formulæ for obtaining those quantities. They may also be found by taking the formu'æ given when interest is payable yearly, and substituting the number of intervals for the number of years, and the interest for one interval instead of the annual interest.

40. To find the present value.

The formulæ as given above is

$$p = s\left(1+\frac{i}{m}\right)^{-mn}.$$

Rule. Find the present value of £1 due at the end of the first interval, and raise it to a power equal to the number of times interest is convertible before the money becomes due, and multiply by the sum due.

Or when the interest for one interval is equal to any of the annual rates for which tables of the present values are given, we have only to take from those tables at that rate, the present value of £1 due at the end of the same number of years as there are intervals of conversion during the term, and multiply it by the sum due.

Example. What is the present value of £350 due 5 years hence, allowing 6 per cent compound interest, payable half-yearly?

$$s = 350 \qquad i = \cdot 06 \qquad n = 5 \qquad m = 2$$

$$\left(1 + \frac{i}{m}\right)^{-mn} = \left(1 + \frac{\cdot 06}{2}\right)^{-2\times 5} = 1.03^{-10} = \begin{array}{r} .744094 \\ 053 \\ \hline 2232282 \\ 372047 \\ \hline 260.4329 \end{array} = \pounds 260\ 8\ 8$$

By logarithms,

$$\begin{array}{rl} \text{co} \log 1.03 = & \bar{1}.98716278 \\ & 10 \\ \hline \log (1.03)^{-10} = & \bar{1}.8716278 \\ \log 350 = & 2.5440680 \\ \hline & 2.4156958 \end{array} \quad 260.433 = \pounds 260\ 8\ 8$$

A has a claim upon B of £925 payable at the end of 6 years, but for the present payment thereof allows him a discount at the same rate as that which may be obtained in the 3 per cents when the price of stocks is 92½. What sum has B to pay?

$$s = 925 \qquad n = 6 \qquad m = 2$$

$$i = \frac{3}{92\frac{1}{2}} = \frac{6}{185} \quad \frac{i}{m} = \frac{6}{185} \times \frac{1}{2} = \frac{3}{185}$$

$$1 + \frac{i}{m} = 1 + \frac{3}{185} = \frac{188}{185}$$

$$\begin{array}{rl} \log 185 = & 2.2671717 \\ \log 188 = & 2.2741578 \\ \hline -\log\left(1+\frac{i}{m}\right)^{-1} = -\log\left(\frac{188}{185}\right)^{-1} = & \bar{1}.9930139 \\ & 12 \\ \hline & \bar{1}.9161668 \\ \log 925 = & 2.9661417 \\ \hline & 2.8823085 \end{array} = 762.620 = \pounds 762\ 12\ 5$$

41. To find (s) the sum due.

By substituting in the formula of Art. 36, $\frac{i}{m}$ for i, and mn for n,

we have $\quad s = p\left(1 + \frac{i}{m}\right)^{mn}$, as found also by Art. 28.

By logarithms,

$$\log s = \log p + mn \cdot \log \left(1 + \frac{i}{m}\right).$$

Rule. Find the amount of £1 at the end of the first interval, raise it to the same power as the number of intervals of conversion in the time, and multiply by the present value.

Example. £260 8 8 is paid for the present value of a sum to be received 6 years hence. What will the person making the payment be then entitled to, allowing 8 per cent compound interest payable quarterly?

$p = 260.433 \qquad i = .08 \qquad n = 6 \qquad m = 4$

By Table 3, $(1.02)^{24} = 1.6084377$

$$\begin{array}{r}
1.6084377 \\
\underline{334.062} \\
3216874 \\
965062 \\
6434 \\
482 \\
\underline{48} \\
418.8900
\end{array} = £418\ 17\ 10$$

By logarithms,

$$\begin{array}{rl}
\log 1.02 = & 0.00860017 \\
 & \underline{\qquad\qquad 24} \\
 & 3440068 \\
 & \underline{1720034} \\
\log 1.02^{24} = & 0.20640408 \\
\log p = & \underline{2.4156960} \\
 & 2.6221001 \qquad 418.890
\end{array}$$

42. To find (n) the number of years.

Substituting in the formula of Art. 37, the logarithm of the amou of £1 when interest is payable m times a year for the logarithm of t amount when interest is payable yearly, it becomes,

$$n = \frac{\log s - \log p}{m \log\left(1 + \frac{i}{m}\right)}$$

Rule. Divide the difference of the logarithms of the present val and the sum due, by the logarithm of the amount of £1 at the end the first interval, multiplied by the number of intervals.

Example. £260 8 8 is paid down in lieu of £350, 6 per c compound interest payable half-yearly being allowed as discount. H long was the sum paid before due?

$p = 260.433 \qquad s = 350 \qquad i = 06$

$$\begin{array}{rl}
\log s = & 2.5440680 \\
\log p = & \underline{2.4156958} \\
.02567444) & 0.1283722(5 \text{ years} \\
 & \underline{1283722} \\
 & \cdots\cdots
\end{array}
\qquad
\begin{array}{rl}
\log 1.03 = & 0.01283722 \\
 & \underline{\qquad\qquad 2} \\
 & .02567444
\end{array}$$

43. To find (i) the rate of interest.

Substituting in the formula of Art. 38, the number of intervals the number of years, we have the interest for one interval:

$$\frac{i}{m} = \left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1,$$

and each side being multiplied by m, gives

$$i = m\left\{\left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1\right\} \text{ as in Art. 32.}$$

$$\log\left(\frac{s}{p}\right)^{\frac{1}{mn}} = \frac{\log s - \log p}{mn}.$$

Rule. Divide the difference between the logarithms of the sum due, and the logarithms of the present value, by the product of the number of years multiplied by the number of periods of conversion in a year; from the corresponding number subtract unity, and multiply the difference by the number of periods of conversion in a year: the product is the interest of £1, which multiplied by 100, gives the rate per cent.

Example. At what rate per cent compound interest, payable half-yearly, may a sum of £350 due 5 years hence, be discharged by the immediate payment of £260 8 8?

$$p = 260.433 \qquad s = 350 \qquad n = 5 \qquad m = 2$$

$$\begin{array}{rll}
\log s = & 2.5440680 & \\
\log p = & \underline{2.4156958} & \\
10) & \underline{0.1283722} & \\
 & .0128372 = & 1.03 \\
 & & \underline{1} \\
 & & .03 \\
 & & \underline{2} \\
 & & .06 = \text{interest of £1} \\
 & & \underline{100} \\
 & & 6 \text{ per cent.}
\end{array}$$

44. The following Table, which shews the present value of £1 due at the end of one year when interest is payable yearly, half-yearly, quarterly, and momently, is found by taking the reciprocals of the numbers in the Table in page 22, and the corresponding logarithms are the complements of the logarithms in the same Table.

Nominal rate of Interest.	Payable.	Present value of £1 in one year.	Logarithm of such present value.	Nominal rate of Interest.	Payable.	Present value of £1 in one year.	Log such v
2 per cent	*y*	.980392	$\bar{1}.9913998282$	5 per cent	*y*	.952381	$\bar{1}.97$
	h	.980296	$\bar{1}.9913572524$		*h*	.951814	$\bar{1}.97$
	q	.980247	$\bar{1}.9913357530$		*q*	.951524	$\bar{1}.97$
	m	.980199	$\bar{1}.9913141104$		*m*	.951230	$\bar{1}.97$
2½ per cent	*y*	.975610	$\bar{1}.9892761346$	6 per cent	*y*	.943396	$\bar{1}.97$
	h	.975461	$\bar{1}.9892099362$		*h*	.942596	$\bar{1}.97$
	q	.975386	$\bar{1}.9891764265$		*q*	.942184	$\bar{1}.97$
	m	.975310	$\bar{1}.9891426380$		*m*	.941764	$\bar{1}.97$
3 per cent	*y*	.970874	$\bar{1}.9871627753$	7 per cent	*y*	.934579	$\bar{1}.97$
	h	.970662	$\bar{1}.9870679155$		*h*	.933511	$\bar{1}.97$
	q	.970554	$\bar{1}.9870197807$		*q*	.932958	$\bar{1}.96$
	m	.970445	$\bar{1}.9869711655$		*m*	.932394	$\bar{1}.96$
3½ per cent	*y*	.966184	$\bar{1}.9850596502$	8 per cent	*y*	.925926	$\bar{1}.96$
	h	.965898	$\bar{1}.9849311642$		*h*	.924556	$\bar{1}.96$
	q	.965752	$\bar{1}.9848658091$		*q*	.923845	$\bar{1}.96$
	m	.965605	$\bar{1}.9847996931$		*m*	.923116	$\bar{1}.96$
4 per cent	*y*	.961538	$\bar{1}.9829666607$	9 per cent	*y*	.917431	$\bar{1}.96$
	h	.961169	$\bar{1}.9827996565$		*h*	.915730	$\bar{1}.96$
	q	.960980	$\bar{1}.9827145049$		*q*	.914843	$\bar{1}.96$
	m	.960789	$\bar{1}.9826282207$		*m*	.913931	$\bar{1}.96$
4½ per cent	*y*	.956938	$\bar{1}.9808837096$	10 per cent	*y*	.909091	$\bar{1}.9$
	h	.956474	$\bar{1}.9806733666$		*h*	.907029	$\bar{1}.9$
	q	.956238	$\bar{1}.9805658615$		*q*	.905950	$\bar{1}.9$
	m	.955997	$\bar{1}.9804567483$		*m*	.904837	$\bar{1}.9$

AMOUNT OF ANNUITIES AT COMPOUND INTERES

45. We now proceed to consider cases in Annuities where
interest is allowed.

Let s = the amount of the annuity,
a = the annuity,
n = the number of years,
i = interest of £1 per annum.

From what has been shewn in treating of the amount of A
simple interest, in Art. 14, it appears that the amount of a
of £1 in n years is found by summing the respective amount
the end of 0, 1, 2, 3, 4, 5, &c. to $(n - 1)$ years. The amo
received at the end of 0 years after due, i. e. received immedia

due is £1, the amount at the end of one year, is $(1+i)$ at the end of two years $(1+i)^2$, &c. (Art. 19).

The sum of the following series will therefore be the amount of £1 per annum in n years.

$$1 + (1+i) + (1+i)^2 + (1+i)^3 + (1+i)^4 \ldots\ldots + (1+i)^{n-3} + (1+i)^{n-2} + (1+i)^{n-1}$$

This series form a geometrical progression which may be summed by means of the formula $\frac{ar^n - a}{r-1}$; in Art. 151 of the treatise on Arithmetic and Algebra where a denotes the first term, n the number of terms, r the common ratio; in the present series the first term is 1, the common ratio $(1+i)$, and number of terms n, the sum is therefore by making the proper substitutions in the formula,

$$\frac{(1+i)^n - 1}{(1+i) - 1} = \frac{(1+i)^n - 1}{i} = \text{amount of £1 per ann. in } n \text{ years;}$$

which multiplied by a gives

$$s = a\frac{(1+i)^n - 1}{i} = \text{the amount of an annuity of £}a \text{ in } n \text{ years.}$$

Rule. Subtract unity from the amount of £1 in n years, multiply the difference by the annuity, and divide by the interest of £1 for one year.

Example. What will an annuity of £30 6 4 amount to in 12 years at 5 per cent compound interest?

$a = 30.31667$ $n = 12$ $i = .05$

Table 3, $1.05^{12} = 1.7958563$

1

.7958563

76613.03

23875689

238757

7959

4775

477

55

.05)2412.7712

482.5542 = £482 11 1

Table 5 contains the amount of £1 per annum at the end of any number of years not exceeding 100, at the several rates of 2, 2½, 3, 3½, 4, 4½, 5, 6, 7, 8, 9, and 10 per cent, from which the amount of any annuity at those rates may be found, by multiplying the amount in the Table by the annuity.

Taking the last example; under the 5 per cent column opposite 12 years we have............ 15.917127
this multiplied by the annuity.. 76613.03

$$\begin{array}{r} 47751381 \\ 477514 \\ 15917 \\ 9550 \\ 955 \\ 111 \\ \hline 482.55428 \end{array}$$

482.55428 = £482 11 1 as before.

Example. What will be the amount of an annuity of £325 in 9 years at £3 6 per cent compound interest?

$$i = .033 \qquad a = 325 \qquad n = 9$$

$$\log(1+i) = \log 1.033 = 0.01410032$$

$$\begin{array}{r} 0.01410032 \\ 9 \\ \hline \end{array}$$

$$\log 1.033^9 = 0.12690288 \qquad 1.339377$$

$$\begin{array}{r} 1.339377 \\ 1 \\ \hline .339377 \\ 523 \\ \hline 1018131 \\ 67875 \\ 16969 \\ \hline .033)\overline{110.2975} \\ \hline 3342.348 \end{array}$$

3342.348 = £3342 7 nearly.

Suppose a sinking fund of £1,000,000 per annum is put by towards the redemption of the national debt for 50 years; what portion of it will be discharged at the expiration of that period, assuming the interest of money at 3½ per cent?

By Table 5, the amount of £1 per annum in 50 years at 3½ per cent is 130.997910, which multiplied by 1,000,000 gives £130,997,910.

This calculation is made on the supposition that all the dividends which would have been due on the redeemed stock, are added each year to the million, and laid out in the purchase of stock to be cancelled.

46. To find (a) the annuity.

$$\text{Art. 44, } s = a\,\frac{(1+i)^n - 1}{i}$$

$$\text{dividing each side by } \frac{(1+i)^n - 1}{i}$$

$$a = \frac{is}{(1+i)^n - 1}$$

Rule. Multiply the amount of the annuity by the interest of £1 for one year, and divide the product by the amount of £1 in the given time, *less one.*

Or by the Tables—

Divide the amount of the annuity by the amount of £1 per annum in the given time.

Example. A person wishes to provide £350 to be paid for the renewal of a lease at the expiration of 10 years, what sum must he lay by annually when interest of money is 4 per cent?

$i = .04 \qquad s = 350 \qquad n = 10$

Table 3, $(1.04)^{10} = 1.480244$ 350
1 .04
.480244) 14.00 (29.152 = £29 3 0
960488
439512
432220
7292
2490
2401
.89

Or thus—

By Table 5, the amount of £1 per annum in 10 years is 12.006107.

12.006107)350.00000(29.152 = £29 3 0
24012214
10987786
10805496
182290
62229
60031
2198

What annuity accumulating at $3\frac{3}{4}$ per cent compound interest for 30 years will amount to £500?

$i = .0375 \quad \log(1+i) = \log 1.0375 = 0.01598811$
$s = 500$ 30
$is = 18.75 \qquad \log(1+i)^n = 0.4796433$ 3.017472
1
2.01747

2.01747)18.75 (9.294 = £9 5 11
1815723
59277
40349
18928
18157
771

47. To find (n) the number of years.

$$\text{Art. 45,} \quad s = a \, . \, \frac{(1+i)^n - 1}{i}$$

multiplying each side by i and dividing by a,

$$\frac{is}{a} = (1 + i)^n - 1$$

by transposition,

$$(1 + i)^n = \frac{is}{a} + 1$$

or by logarithms,

$$n \times \log (1 + i) = \log\left(\frac{is}{a} + 1\right)$$

dividing each side by $\log (1 + i)$

$$n = \frac{\log\left(\frac{is}{a} + 1\right)}{\log (1 + i)}$$

Rule. Divide the product of the amount of the annuity and the terest of £1 for one year, by the annuity; add one to the quotient, divide the logarithm of the result, by the logarithm of the amount o in one year.

Example. In how many years will a debt of £800,000,000 be charged by appropriating to that purpose annually a sinking fun £3,000,000, supposing the interest of money to be 3½ per cent?

$$s = 800{,}000{,}000 \qquad i = .035 \qquad a = 3{,}000{,}000$$

$$1 + \frac{is}{a} = 1 + \frac{800{,}000{,}000 \times .035}{3{,}000{,}000} = 1 + \frac{800 \times .035}{3}$$

$$= 1 + \frac{28}{3} = \frac{31}{3} = 10.333333$$

$$\frac{\log 10.33333\cdot}{\log \ \ 1.035} = \frac{1.0142404}{.0149403} = 67.89 \text{ years.}$$

In how many years will an annuity of £29 3 0 amount to £35 4 per cent compound interest?

$$a = 29.15 \qquad s = 350 \qquad i = .04$$

$$1 + \frac{is}{a} = 1 + \frac{350 \times .04}{29.15} = 1 + \frac{14}{29.15} = \frac{43.15}{29.15}$$

$$\begin{aligned} \log 43.15 &= 1.6349808 \\ \log 29.15 &= \underline{1.4646386} \\ \log\left(1 + \frac{is}{a}\right) &= 0.1703422 \end{aligned}$$

$$\frac{\log\left(1 + \frac{is}{a}\right)}{\log (1 + i)} = \frac{0.1703422}{.01703333} = 10 \text{ years nearly.}$$

48. To find (i) the rate of interest.

$$\text{(Art. 45.)}\ s = a\,\frac{(1+i)^n - 1}{i}$$

multiplying by i and dividing by a,

$$\frac{s}{a}\,i = (1+i)^n - 1$$

the quantity i is so involved in this equation, that we cannot directly find its value by any of the known rules in Algebra; we may, however, approximate to the value by the following method to any degree of accuracy.

Let i' be a quantity found by trial somewhat near the true value of i, and call the difference between it and the true value z, then $i = i' + z$. Substituting this value in the above equation, we have

$$\frac{s}{a}\,i' + \frac{s}{a}\,z = (1 + i' + z)^n - 1$$

By transposition,

$$(1 + i' + z)^n = 1 + \frac{s}{a}\,i' + \frac{s}{a}\,z$$

Expanding by the binomial theorem, this last equation becomes

$$(1+i')^n + n\,(1+i')^{n-1}z + \frac{n(n-1)}{2}\,(1+i')^{n-2}z^2, \&c.$$

$$= 1 + \frac{s}{a}\,i' + \frac{s}{a}\,z$$

As z is a very small quantity, the series converges very fast, and we may safely reject the terms affected with the second and higher powers of z; the equation then is

$$(1+i')^n + n\,(1+i')^{n-1}z = 1 + \frac{s}{a}\,i' + \frac{s}{a}\,z.$$

By transposition,

$$n\,(1+i')^{n-1}z - \frac{s}{a}\,z = 1 + \frac{s}{a}\,i' - (1+i')^n,$$

$$\text{i. e.}\quad z\left\{n\,(1+i')^{n-1} - \frac{s}{a}\right\} = 1 + \frac{s}{a}\,i' - (1+i')^n$$

dividing each side by $n\,(1+i')^{n-1} - \frac{s}{a}$ we have

$$z = \frac{1 + \frac{s}{a}\,i' - (1+i')^n}{n\,(1+i')^{n-1} - \frac{s}{a}}$$

this result being added *to the assumed* quantity i', gives the value of very nearly, and a still nearer approximation may be made, if upon trial the result is not found sufficiently exact, by proceeding in the same manner with the value just obtained.

For common purposes, Table 5, containing the amounts of £1 per annum may be used; for if we divide the amount of the annuity by the annuity, we obtain the amount of £1 per annum, and the nearest quantity to this opposite the given number of years will give (by observing the rate per cent under which this is found) an approximation to the rate sought.

At what rate per cent will £20 per annum amount in 10 years to £232.07?

$\frac{s}{a} = \frac{232.07}{20} = 11.6035 =$ amount of £1 per annum in 10 years: referring to Table 5, we find this sum lies between the amounts of £1 per annum in 10 years at 3 and 3½ per cent.

11.7314 = amount of £1 per annum at 3½ per cent .035
11.4639 = ... ditto .. .. 3 per cent .03
.2675 difference in the amounts .005 {difference of interest.

$$11.7314 - 11.6035 = .1279$$

$$.2675 : .005 :: .1279 : .00239;$$

this being added to .03 gives .03239;
call this i', and make the true rate $i = i' + z$;

$$\text{then } z = \frac{1 + \frac{s}{a} i' - (1 + i')^n}{n(1 + i')^{n-1} - \frac{s}{a}} = \frac{1 + .375837 - 1.375425}{13.32276 - 11.6035}$$

$$= \frac{.000412}{1.7192} = 00024.$$

$i = i' + z = .03239 + .00024 = .03263$, which result is very near the truth, the true value being .032625, or £3 5 3 per cent: if .03263 had not upon trial proved sufficiently near, we might then have obtained a still nearer approximation by assuming $i' = .03263$, and repeating the process.

The sum .03239 obtained by adding to the rate per cent the proportional part obtained from the differences, is sufficiently near for most purposes, it differing only 6*d*. per cent from the true rate.

48. When the annuity is payable m' times a year, and interest is convertible m times, $\frac{m}{m'}$ (if a whole number) is the number of periods interest is convertible in the interval between any two payments of the annuity; the amount of £1 in the m'th part of a year is therefore $\left(1 + \frac{i}{m}\right)^{\frac{m}{m'}}$

and the following series is therefore the amount of an annuity of £1 at the expiration of n years, since each payment is £$\frac{1}{m'}$.

$$\frac{1}{m'}\left\{1+\left(1+\frac{i}{m}\right)^{\frac{m}{m'}}+\left(1+\frac{i}{m}\right)^{\frac{2m}{m'}}+\left(1+\frac{i}{m}\right)^{\frac{3m}{m'}}+\ldots\right.$$

$$\left.+\left(1+\frac{i}{m}\right)^{\frac{m(m'n-2)}{m'}}+\left(1+\frac{i}{m}\right)^{\frac{m(m'n-1)}{m'}}\right\}.$$

Substituting, as in Art. 44, we have here $1 =$ the first term, $m'n =$ the number of terms, and $\left(1+\frac{i}{m}\right)^{\frac{m}{m'}} =$ the common ratio, and the sum of the series will be

$$\frac{1}{m'} \times \frac{\left(1+\frac{i}{m}\right)^{mn}-1}{\left(1+\frac{i}{m}\right)^{\frac{m}{m'}}-1}$$

$$\therefore s = \frac{a}{m} \times \frac{\left(1+\frac{i}{m}\right)^{mn}-1}{\left(1+\frac{i}{m}\right)^{\frac{m}{m'}}-1}.$$

when $m = m'$ then $\frac{m'}{m} = 1$, and the formula becomes

$$\frac{a}{m} \times \frac{\left(1+\frac{i}{m}\right)^{mn}-1}{\left(1+\frac{i}{m}\right)-1} = \frac{a}{m} \times \frac{\left(1+\frac{i}{m}\right)^{mn}-1}{\frac{i}{m}}$$

$$= a\,\frac{\left(1+\frac{i}{m}\right)^{mn}-1}{i}$$

What will an annuity of £20 amount to in 12 years at 6 per cent compound interest, when annuity and interest are payable half-yearly?

$a = 20 \qquad i = .06 \qquad n = 12 \qquad m = 2$

By Table 3, $(1.03)^{24} = 2.032794$

$$\begin{array}{r}
2.032794 \\
1 \\
\hline
1.032794 \\
20 \\
\hline
.06)\,2.065588 \\
\hline
344.265
\end{array}$$

$344.265 =$ £344 5 3.

We may also find the amount by multiplying by 10 the amount of £1 per annum in 24 years at 3 per cent.

$$\begin{array}{r} 34.42647 \\ 10 \\ \hline 344.2647 \end{array} = £344\ 5\ 3.$$

PRESENT VALUES OF ANNUITIES AT COMPOUND INTEREST.

49. The present value of £1 payable at the end of one year, (Art. 35.) is $(1+i)^{-1}$, at the end of two years, $(1+i)^{-2}$, and generally at the end of n years $(1+i)^{-n}$; and the present value of an annuity being equal to the aggregate of the present values of the several payments, the following series will be the present value of £1 per annum for n years:

$$(1+i)^{-1} + (1+i)^{-2} + (1+i)^{-3} + (1+i)^{-4} + \dots$$
$$\dots + (1+i)^{-(n-2)} + (1+i)^{-(n-1)} + (1+i)^{-n};$$

the first term of which is $(1+i)^{-1}$, the common ratio $(1+i)^{-1}$, and the number of terms n; the sum of the series by the formula $\frac{a - ar^n}{1-r}$. (*Arith. and Alg.* 115.), where a denotes the first term, n the number of terms, and r the common ratio will be found equal to

$\frac{(1+i)^{-1} - (1+i)^{-(n+1)}}{1-(1+i)^{-1}}$, which becomes, by multiplying numerator and denominator by $(1+i)$,

$$\frac{1-(1+i)^{-n}}{(1+i)-1} = \frac{1-(1+i)^{-n}}{i}.$$

Let us now make p = present value,
a = annuity,
n = number of years,
i = interest of £1 for one year.

50. To find (p) the present value—

Multiplying the present value of £1 per annum just found by a, we have the present value of £ a per annum

$$p = a.\frac{1-(1+i)^{-n}}{i}.$$

Rule. Subtract from unity the present value of £1 due at the expiration of the number of years the annuity has to continue, and divide the difference by the interest of £1 for one year; the quotient multiplied by the annuity gives its present value.

Example. A holds for the term of 20 years an estate by lease, of the value of £250 per annum, for which he pays an annual rent of £80.

What sum ought he to require for the disposal of his title, supposing him to have 5 per cent interest?

Deducting £80 from £250 leaves £170, the annuity of which we have to find the value—

$$a = 170 \qquad i = .05 \qquad n = 20$$

$$\text{Table 4, } 1.05^{-20} = .37688948$$

$$\begin{array}{rr}
1 - .37688948 = & .62311052 \\
 & 071 \\ \hline
 & 62311052 \\
 & 43617736 \\ \hline
.05) & 105.928788 \\ \hline
 & 2118.5757 = £2118\ 11\ 6.
\end{array}$$

51. Table 6 contains the present values of £1 per annum, at the rates of 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, 6, 7, 8, 9, and 10 per cent, for any number of years not exceeding 100, from which we may find the value of any other annuity at any of the above rates, by multiplying the value in the Table by the annuity of which the value is to be found. Taking the example above; opposite 20 years under the column of 5 per cent is

$$\begin{array}{rl}
12.462210 & \text{the present value of £1 per annum for 20 years} \\
071 & \\ \hline
12462210 & \\
8723547 & \\ \hline
£2118.5757 & = \text{the amount as before.}
\end{array}$$

What sum would be required for the purchase of an annuity of £20 to continue 10 years, when interest of money is £3 5 per cent?

$$a = 20 \qquad i = .0325 \qquad n = 10$$

$$\begin{array}{rrl}
-\log 1.0325 = & \bar{1}.98610994 & \\
n = & 10 & 1. \\ \hline
\log(1+i)^{-n} = & \bar{1}.8610994 & .7262721 \\ \cline{3-3}
 & & .2737279 = 1 - (1+i)^{-n} \\
 & & 20 \\ \cline{3-3}
 & .0325) & 5.474558\ (\ 168.448 = £168\ 9\ 0 \\
 & & 325 \\ \cline{3-3}
 & & 2224 \\
 & & 1950 \\ \cline{3-3}
 & & .2745 \\
 & & 2600 \\ \cline{3-3}
 & & 1455 \\
 & & 1300 \\ \cline{3-3}
 & & 1558 \\
 & & 1300 \\ \cline{3-3}
 & & 258
\end{array}$$

52. To find (a) the annuity—

$$\text{(Art. 50.)} \quad p = a. \frac{1-(1+i)^{-n}}{i},$$

dividing each side by $\dfrac{1-(1+i)^{-n}}{i}$,

$$a = \frac{ip}{1-(1+i)^{-n}}.$$

Rule. Multiply the present value by the interest of £1 for a and divide the product by the difference between unity and the pı value of £1, due the same number of years the annuity has to con

Or by the Tables—

Divide the purchase money by the present value of £1 per an given in the Tables.

Example. What annuity, to continue 20 years, may be purc for £500 when the interest of money is 4 per cent?

By Table 6, 13.590326 is the present value of £1 per annu 20 years.

$$\begin{array}{rl}
13.590326)500 & (36.791 = £36\ 15\ 10 \\
40770978 & \\
\hline
9229022 & \\
8154196 & \\
\hline
1074826 & \\
951322 & \\
\hline
123504 & \\
122313 & \\
\hline
1191 &
\end{array}$$

If it were proposed in lieu of the 3½ per cent stock to give an e lent annuity to continue 60 years, what annuity per cent shou granted, supposing the stock at par?

$$i = .035 \qquad n = 60 \qquad p = 100$$

$$\begin{array}{lrr}
 & 1.- & .035 \\
\text{Table 4,} \quad 1.035^{-60} = & .126934 & 100 \\
\hline
 & .873066 &)3.5..\ (4.009 = £4\ 0\ 2\text{n} \\
 & & 3492264 \\
\hline
 & & 7736
\end{array}$$

53. To find (n) the number of years—

$$\text{(Art. 50.)} \quad p = a\frac{1-(1+i)^{-n}}{i}.$$

Multiplying by i, and dividing by a,

$$\frac{ip}{a} = 1-(1+i)^{-n}.$$

By transposition,

$$(1+i)^{-n} = 1 - \frac{ip}{a};$$

by logarithms,

$$-n \log(1+i) = \log\left(1 - \frac{ip}{a}\right)$$

$$\text{or } n \log(1+i) = -\log\left(1 - \frac{ip}{a}\right),$$

dividing each side by log (1 + i),

$$n = \frac{-\log\left(1 - \frac{ip}{a}\right)}{\log(1+i)}.$$

For how many years may an annuity of £30 be purchased for £551 15 3, when interest of money is 3½ per cent?

$$p = 551.7625 \qquad a = 30 \qquad i = .035$$

$$\begin{array}{r l}
551.7625 & \\
.035 & \\
\hline
27588125 & \\
16552875 & \\
\hline
30)\overline{19.3116875} & \\
\hline
.64372291 & = \frac{ip}{a} \\
1. & \\
\hline
.35627709 & = 1 - \frac{ip}{a}.
\end{array}$$

$$\frac{-\log\left(1 - \frac{ip}{a}\right)}{\log(1+i)} = \frac{0.4482121}{.0149403} = 30 \text{ years.'}$$

' 54. To find (i) the rate of interest—

$$\text{(Art. 50.)} \qquad p = a \, . \, \frac{1 - (1+i)^{-n}}{i};$$

multiplying each side by i, and dividing by a,

$$\frac{ip}{a} = 1 - (1+i)^{-n};$$

by transposition,

$$(1+i)^{-n} = 1 - \frac{ip}{a}.$$

As there is no direct mode of solving this equation by any of the known rules of algebra, we must approximate to the value of i by the following method, similar to that in Art. 48:

Let i' be a quantity *found by trial* somewhat near the true value of

i, and let z be its difference from the true value, then $i = i' + z$, and the above equation becomes

$$(1 + i' + z)^{-n} = 1 - \frac{pi'}{a} - \frac{pz}{a},$$

expanding the first side by the binomial theorem (*Arith. and Alg.* 275.)

$$(1 + i')^{-n} - n\,(1 + i')^{-(n+1)}\,z + \frac{n\,(n+1)}{2}\,(1 + i')^{-(n+2)}\,z^2 - \&c.$$

$$= 1 - \frac{pi'}{a} - \frac{pz}{a}.$$

Since z must be some very small quantity, the result will be very little affected, if we reject those terms in which the second and higher powers of z enter, which makes the equation

$$(1 + i')^{-n} - n\,(1 + i')^{-(n+1)}\,z = 1 - \frac{pi'}{a} - \frac{pz}{a}.$$

By transposition,

$$\frac{pz}{a} - n\,(1 + i')^{-(n+1)}\,z = 1 - \frac{pi'}{a} - (1 + i')^{-n},$$

$$z\left\{\frac{p}{a} - n\,(1 + i')^{-(n+1)}\right\} = 1 - \frac{pi'}{a} - (1 + i')^{-n};$$

dividing each side by $\frac{p}{a} - n\,(1 + i')^{-(n+1)}$,

$$z = \frac{1 - \frac{pi'}{a} - (1 + i')^{-n}}{\frac{p}{a} - n\,(1 + i')^{-(n+1)}};$$

this being added to i' will give an approximation to the value of i; and if upon trial it should not be found sufficiently correct, a value may be found still nearer by taking the value just found, and repeating the process.

The Long Annuities, which have 30 years to run, are now sold at 19 years' purchase; what rate of interest does the purchaser obtain for his money?

By Table 6, we find the rate lies between 3 and 3½ per cent.

19.600441 = No. years' purchase at 3 per cent
18.392045 = ditto 3½ per cent
1.208396 = difference

.035 19.600441
.03 19.

As 1.208396 : .005 :: .600441 : .0024828

Let $i' = .03 + .0024828 = .0324828$;

then assume $i = i' + z = .0324828 + z$

$$z = \frac{1 - \frac{pi'}{a} - (1 + i')^{-n}}{\frac{p}{a} - n\,(1 + i')^{-(n+1)}} =$$

$$= \frac{1 - 19 \times .0324828 - 1.0324828^{-30}}{19 - 30\,(1.0324828)^{-31}} = -\,.0000513$$

$i = .0324828 - .0000513 = .0324315 =$ interest of £1

$.0324315 \times 100 = 3.24315 =$ £3 4 10¼ per cent.

55. When interest is convertible m times a year, and the annuity payable m' times, each payment being $\frac{a}{m'}$, the present value of the first payment is $\frac{a}{m'}\left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}}$; the number of payments in n years is $m'n$, and the present value of the annuity is the sum of the series

$$\frac{a}{m'}\left\{\left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}} + \left(1 + \frac{i}{m}\right)^{-\frac{2m}{m'}} \pm \left(1 + \frac{i}{m}\right)^{-\frac{3m}{m'}} + \ldots\right.$$

$$\left.\ldots\ldots + \left(1 + \frac{i}{m}\right)^{-\frac{mn}{m'}}\right\},$$

where the first term is $\left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}}$, the common ratio $\left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}}$, and the number of terms $m'n$, which being substituted in the formula $\frac{a - ar^n}{1 - r}$, as in Art. 49., the present value of the annuity becomes

$$p = \frac{a}{m'} \times \frac{\left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}} - \left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}}\left(1 + \frac{i}{m}\right)^{-mn}}{1 - \left(1 + \frac{i}{m}\right)^{-\frac{m}{m'}}};$$

multiplying numerator and denominator by $\left(1 + \frac{i}{m}\right)^{\frac{m}{m'}}$;

$$p = \frac{a}{m} \times \frac{1 - \left(1 + \frac{i}{m}\right)^{-mn}}{\left(1 + \frac{i}{m}\right)^{\frac{m}{m'}} - 1}:$$

when m and m' are equal, this becomes

$$p = \frac{a}{m}\left\{\frac{1 - \left(1 + \frac{i}{m}\right)^{-mn}}{\left(1 + \frac{i}{m}\right) - 1}\right\} = \frac{a}{m} \times \frac{1 - \left(1 + \frac{i}{m}\right)^{-mn}}{\frac{i}{m}}$$

$$= a . \frac{1 - \left(1 + \frac{i}{m}\right)^{-mn}}{i}.$$

What sum would be required to purchase an annuity of £20 to continue 15 years in the Government Office, when the price of the 3 pe cent consols is such as to yield an interest of £3 5 per cent?

Here the annuity and interest are both convertible half-yearly.

$$\therefore m = 2 \qquad a = 20 \qquad i = .0325 \qquad n = 15$$

$$\begin{array}{l} 2).0325 \\ \overline{.01625} \\ 1. \end{array}$$

$$-\log \overline{1.01625} = \bar{1}.99299944$$

$$\begin{array}{r} 30 = mn \\ \hline \bar{1}.7899832 \end{array} \qquad \begin{array}{l} .616571 = (1+i)^{-mn} \\ 1. \\ \hline .383429 = 1 - (1+i)^{-mn} \\ 20 \\ \hline \end{array}$$

$$.0325)7.66858(\underbrace{235.956 = £235\ 19}_{}$$

which agrees with the rate i serted in the Government scal for granting life annuities.

$$\begin{array}{r} 650 \\ \hline 1168 \\ 975 \\ \hline 1935 \\ 1625 \\ \hline 3108 \\ 2925 \\ \hline 1830 \\ 1625 \\ \hline 205 \end{array}$$

PERPETUITIES.

56. When the annuity is to continue for ever, it is called a perpetuity in which case n is infinite, and in the formula $p = a\,\dfrac{1 - (1+i)^{-n}}{i}$ given in Art. 50, the value of the quantity $(1 + i)^{-n}$ is less than an that can be assigned; that part of the formula therefore vanishes, an the expression becomes

$$p = a . \frac{1}{i} = \frac{a}{i} =, \text{ the present value.}$$

Rule. Divide the annuity whose value is to be found by the interes of £1 per annum.

What is the present value of an estate in fee simple of £434 pe annum, when interest of money is 4 per cent?

$$\frac{434}{.04} = £10850.$$

57. To find (i) the annuity—

$$\text{(Art. 56.)} \qquad p = \frac{a}{i},$$

multiplying each side by i,

$$a = ip.$$

Rule. Multiply the present value by the interest of £1 per annum.

Example. What perpetuity will £925 purchase when money bears 5 per cent interest?

$$p = 925 \qquad i = .05$$

$$\begin{array}{r} .05 \\ \hline 46.25 = \pounds 46 \;\; 5 \;\; 0 \end{array}$$

58. To find (i) the interest—

$$\text{(Art. 57.)} \qquad a = ip,$$

dividing by p,

$$i = \frac{a}{p} =, \text{ interest of £1 per annum}$$

$$100\,i = \frac{100\,a}{p} = \text{ditto per cent.}$$

Rule. Multiply the annuity by 100, and divide by the principal, which gives the rate per cent.

What rate per cent is obtained when £925 secures a perpetuity of £46 5 per annum?

$$p = 925 \qquad a = 46.25$$

$$\begin{array}{r} 100 \\ \hline 925)4625(5 \text{ per cent.} \\ 4625 \end{array}$$

When the annuity is payable m' times in a year, and interest is convertible m times, $\left(1+\frac{i}{m}\right)^{-mn}$ vanishes in the formula of Art. 55., when the annuity is perpetual, and the expression then becomes

$$p = \frac{a}{m} \times \frac{1}{\left(1 + \frac{i}{m}\right)^{\frac{m}{m'}} - 1};$$

if the annuity is always payable when interest is convertible, then $m = m'$ and the formula becomes

$$p = \frac{a}{m} \times \frac{1}{\left(1+\frac{i}{m}\right) - 1} = \frac{a}{m} \times \frac{1}{\frac{i}{m}} = \frac{a}{i},$$ which coincides with the formula for finding the present value when the annuity and interest are payable yearly.

REVERSIONS.

59. When an annuity is not to be entered upon until after the expiration of a certain number of years, it is called a ***Reversionary* or *Deferred Annuity***, the present value of which may be obtained by finding the present value of an annuity to be entered upon immediately and continue until the expiration of the reversion, and subtracting therefrom the present value of an annuity to be continued only until the time of entering on possession of the reversion; for it is evident that if an annuity be deferred d years, and then continue n years, its present value will be less than that of an annuity to be received during both the d years and the n years by the present value of an annuity for d years.

Let $p =$ the present value,
$a =$ the annuity,
$n =$ number of years the annuity continues,
$d =$ number of years deferred,
$i =$ annual interest of £1;

then Art. 50. $$p = a.\frac{1-(1+i)^{-(d+n)}}{i} - a.\frac{1-(1+i)^{-d}}{i}$$

$$= a.\frac{(1+i)^{-d}-(1+i)^{-(d+n)}}{i}$$

Rule. From the present value of £1, due the number of years deferred, subtract the present value of £1, due at the same time as the last payment of the reversionary annuity, multiply the difference by the annuity, and divide by the annual interest of £1.

Example. What is the present value of the reversion of £30 per annum for 8 years, to be entered upon after the expiration of the next 10 years; interest 5 per cent?

$$\begin{array}{lll} (1+i)^{-d} & = 1.05^{-10} = & .613913 \\ (1+i)^{-(d+n)} & = 1.05^{-18} = & .415521 \\ \hline & & .198392 \\ & & 30 \\ \hline & .05) & 5.95176 \\ \hline & & 119.035 = £119\ 0\ 8\tfrac{1}{2} \end{array}$$

60. To find (a) the annuity.

(Art. 59.) $$p = a.\frac{(1+i)^{-d}-(1+i)^{-(d+n)}}{i}$$

multiply by $$\frac{i}{(1+i)^{-d}-(1+i)^{-(d+n)}}$$

$$a = \frac{ip}{(1+i)^{-d}-(1+i)^{-(d+n)}}.$$

Rule. Divide the product of the present value of the annuity and the annual interest of £1 by the difference between the present value of £1 due the number of years the annuity is deferred, and the present value of £1 due when the last year's annuity becomes payable.

Example. What annuity to continue 8 years after the expiration of the next 10 years may be purchased for £119 0 8½ when the interest of money is 5 per cent?

$$p = 119\ 0\ 8\tfrac{1}{2} = 119.035 \qquad d = 10 \qquad n = 8 \qquad i = .05$$

Table 4, $1.05^{-10} = .613913$ $p = 119.035$

$1.05^{-18} = .415521$ $i = \underline{\quad 05}$ £

$.198392$) 5.95175(30 annuity.

$\underline{5\ 95176}$

......

61. To find (n) the number of years.

$$\text{(Art. 59.) } p = a.\frac{(1+i)^{-d} - (1+i)^{-(d+n)}}{i}$$

multiply by i and divide by a,

$$(1+i)^{-d} - (1+i)^{-(d+n)} = \frac{ip}{a}$$

by transposition, $(1+i)^{-d} - \frac{ip}{a} = (1+i)^{-(d+n)}$

multiply each side by $(1+i)^{d}$

$$(1+i)^{0} - \frac{ip}{a}(1+i)^{d} = (1+i)^{-n}$$

but $(1+i)^{0} = 1$,

$$\therefore\ (1+i)^{-n} = 1 - \frac{ip}{a}(1+i)^{d}$$

by logarithms $-n \times \log(1+i) = \log\left\{1 - \frac{ip}{a}(1+i)^{d}\right\}$

dividing each side by $-\log(1+i)$,

$$n = \frac{-\log\left\{1 - \frac{ip}{a}(1+i)^{d}\right\}}{\log(1+i)}$$

Example. The sum of £119 0 8½ is given for the purchase of an annuity of £30 to be entered upon after the expiration of 10 years; how long will the annuity continue, reckoning interest at 5 per cent?

$$p = 119.035 \qquad n = 10 \qquad i = .05 \qquad a = 30$$

$$1 - \frac{ip}{a}(1+i)^{d} = 1 - \frac{119.035 \times .05 \times 1.05^{10}}{30}$$

Table 3, $1.05^{10} = 1.628895$.

$$\therefore 1 - \frac{ip}{a}(1+i)^{d} = 1 - \frac{119.035. \times .05 \times 1.628895}{30}$$

$$= 1 - .323157 = .676843$$

$$\frac{-\log\left\{1-\frac{ip}{a}(1+i)^{d}\right\}}{\log(1+i)}=\frac{-\log .676843}{\log 1.05}:$$

$$=\frac{.169512}{.021189}=8 \text{ years.}$$

62. To find (d) the number of years deferred.

$$\text{Art. 61, } (1+i)^{-d}-(1+i)^{-(d+n)}=\frac{ip}{a};$$

i. e. $(1+i)^{-d}\{1-(1+i)^{-n}\}=\frac{ip}{a}.$

by logarithms, $-d\times\log(1+i)+\log\{1-(1+i)^{-n}\}=\log\frac{ip}{a};$

by transposition, $d\log(1+i)=\log\{1-(1+i)^{-n}\}-\log\frac{ip}{a};$

dividing by $\log(1+i)$

$$d=\frac{\log\{1-(1+i)^{-n}\}-\log\frac{ip}{a}}{\log(1+i)}.$$

Example. A deferred annuity of £30 to continue 8 years is p chased for £119 0 8½ when the interest of money is 5 per cent; i required to determine how many years the annuity is deferred.

$p=119.035 \qquad n=8 \qquad i=.05 \qquad a=30$

$$\begin{array}{lr@{\qquad}r}
 & 1.00000000 & 119.035 \\
\text{Table 4, } 1.05^{-8} & \underline{.67683936} & \underline{.05} \\
1-1.05^{-8}= & .32316064 & 30)\underline{5.95175} \\
 & & .198392=\frac{ip}{a}
\end{array}$$

$$\frac{\log\{1-(1+i)^{-n}\}-\log\frac{ip}{a}}{\log(1+i)}=\frac{\log .32316064-\log .198392}{\log 1.05}:$$

$$\frac{.50941-.29752}{.021189}=\frac{.21189}{.021189}=10 \text{ years.}$$

63. To find (i) the annual rate of interest.

$$\text{(Art. 59.) } p=a\,\frac{(1+i)^{-d}-(1+i)^{-(d+n)}}{i}$$

multiply each side by $\frac{i}{a}$,

$$(1+i)^{-d}-(1+i)^{-(d+n)}=\frac{ip}{a}.$$

Let i' be a quantity found by trial somewhat near the true value of i, and let $i = i' + z$, then by substituting this value in the above equation, it will become

$$(1+i'+z)^{-d} - (1+i'+z)^{-(d+n)} = \frac{p}{a}(i'+z);$$

by the binomial theorem,

$$\{(1+i')+z\}^{-d} = (1+i')^{-d} - d\,(1+i')^{-(d+1)}z + \frac{d\,(d+1)}{2}(1+i')^{-(d+2)}z^2 - \&c.$$

$$\{(1+i')+z\}^{-(d+n)} = (1+i')^{-(d+n)} - (d+n)(1+i')^{-(d+n+1)}z + \frac{(d+n)(d+n+1)}{2}(1+i')^{-(d+n+2)}z^2 - \&c.$$

subtracting the second series from the first and rejecting the terms affected with the second and higher powers of z, we obtain

$$(1+i')^{-d} - (1+i')^{-(d+n)} - d\,(1+i')^{-(d+1)}z + (d+n)(1+i')^{-(d+n+1)}z = \frac{pi'}{a} + \frac{pz}{a};$$

by transposition, $\frac{pz}{a} + d\,(1+i')^{-(d+1)}z - (d+n)(1+i')^{-(d+n+1)}z$

$$= (1+i')^{-d} - (1+i')^{-(d+n)} - \frac{pi'}{a};$$

dividing each side by $\frac{p}{a} + d\,(1+i')^{-(d+1)} - (d+n)(1+i')^{-(d+n+1)}$ we obtain

$$z = \frac{(1+i')^{-d} - (1+i')^{-(d+n)} - \frac{pi'}{a}}{\frac{p}{a} + d\,(1+i')^{-(d+1)} - (d+n)(1+i')^{-(d+n+1)}}$$

Example. At what rate of interest will £645.174 purchase an annuity of £100 to be entered upon after the expiration of 8 years, and then continue 10 years?

By a few trials we find the interest is between 3 per cent and $3\frac{1}{2}$ per cent; let us then make $i' = .03$.

$1+i' = 1.03 \quad d = 8 \quad n = 10 \quad a = 100 \quad p = 645.174$

Table 4, $(1.03)^{-8} = .789409 = (1+i')^{-d}$

$(1.03)^{-18} = \underline{.587395} = (1+i')^{-(d+n)}$

$$\begin{array}{r} .202014 \\ \underline{.193552} \\ .008462 \end{array} = (1+i')^{-d} - (1+i')^{-(d+n)} - \frac{i'p}{a}$$

$$\begin{array}{r} .03 \\ 100)\overline{19.3552} \\ \hline .193552 \end{array} = \frac{i'p}{a}$$

$$\frac{p}{a} = \frac{645.174}{100} = 6.45174.$$

Table 4, $(1.03)^{-9} = .766417 = (1 + i')^{-(d+1)}$

$$\begin{array}{l}
.766417 \\
\underline{8} \\
6.131336 = d\,(1 + i')^{-(d+1)} \\
\underline{6.45174} \\
12.58307 = \frac{p}{a} + d\,(1 + i')^{-(d+1)}
\end{array}$$

Table 4, $1.03^{-19} = .570286 = (1 + i')^{-(d+n+1)}$

$$\begin{array}{r}
81 \\
\hline
570286 \\
456229 \\
\hline
10.26515 = (d + n)\,(1 + i')^{-(d+n+1)} \\
12.58307\phantom{= (d + n)\,(1 + i')^{-(d+n+1)}} \\
\hline
2.31792 = \frac{p}{a} + d(1+i')^{-(d+1)} - (d+n)\,(1+i')^{-}
\end{array}$$

$$\begin{array}{r}
2.318).008462(.0036 = z \\
\underline{6954} \\
1508
\end{array}$$

$i = i' + z = .0336$, which on trial will be found extremel the true value, which is $.0333$.

64. *When the reversion is in perpetuity*, $(1 + i)^{-(d+n)}$ in tl mula of Art. 59. vanishes, and the equation becomes

$$p = \frac{a\,(1 + i)^{-d}}{i}.$$

Rule. Multiply the present value of £1, due the number of yei perpetuity is deferred, by the annuity, and divide by the annual i of £1.

Example. What is the present value of the reversion of a perj of £50 per annum after 10 years, at 5 per cent interest?

$$a = 50 \qquad d = 10 \qquad i = .05.$$

Table 4, $(1 + i)^{-d} = (1.05)^{-10} = .613913$

$$\begin{array}{r}
.613913 \\
\underline{50} = a \\
.05)\overline{30.69565} \\
\overline{613.913} = £613\ 18\ 3.
\end{array}$$

65. To find (a) the annuity.

$$\text{Art. 64. } p = \frac{a(1 + i)^{-d}}{i};$$

multiplying by i and dividing by $(1 + i)^{-d}$

$$a = \frac{ip}{(1 + i)^{-d}} = ip\,(1 + i)^{d}.$$

Rule. Multiply the present value of the reversion by the ı interest of £1 and by the amount of £1 at the end of the term tl *petuity is deferred.*

Example. **The reversion of a fee simple estate after 10 years is sold for £613 18 3¼, what annual return should it produce to allow the** purchaser 5 per cent interest for his money?

$$d = 10 \qquad i = .05 \qquad p = \begin{array}[t]{r} 613.914 \\ .05 \\ \hline 30.6957 \\ \underline{98826.1} \\ \hline 30696 \\ 18417 \\ 614 \\ 245 \\ 24 \\ 3 \\ \hline 49.999 \end{array} \text{ Answer £50.}$$

66. To find (d) the number of years deferred.

$$\text{Art. 64. } p = \frac{a(1+i)^{-d}}{i}$$

multiplying by i and dividing by a,

$$(1+i)^{-d} = \frac{ip}{a};$$

by logarithms,

$$-d \times \log(1+i) = \log\frac{ip}{a},$$

$$d = -\frac{\log\frac{ip}{a}}{\log(1+i)} =$$

Example. If an annuity of £50 be purchased for £613 18 3¼ at 5 per cent interest, what period must expire before the annuity is entered upon?

$$p = 613\ 18\ 3\tfrac{1}{4} = 613.914 \qquad i = .05 \qquad a = 50$$

$$\begin{array}{r} .05 \\ \hline 50)\underline{30.6957} = ip \\ .613914 = \frac{ip}{a}. \end{array}$$

$$\frac{-\log\frac{ip}{a}}{\log(1+i)} = \frac{-\log .613914}{\log 1.05} = \frac{.211892}{.0211892} = 10 \text{ years.}$$

67. To find (i) the annual rate of interest.

$$\text{Art. 64. } (1+i)^{-d} = \frac{ip}{a}:$$

assume i' as a quantity somewhat near the true value of i, and let th true value be $i = i' + z$; then the equation becomes

$$(1 + i' + z)^{-d} = \frac{p}{a}\, i' + \frac{p}{a} z,$$

expanding $(1 + i' + z)^{-d}$ by the binomial theorem (*Arith. an Alg.* 275.) we have

$$(1 + i')^{-d} - d\,(1 + i')^{-(d+1)} z + \frac{d\,(d+1)}{2}(1+i')^{-(d+2)} z^2 -, \&$$

$$= \frac{pi'}{a} + \frac{pz}{a};$$

rejecting the second and higher powers of z, which being very smal will not much affect the result.

$$(1 + i')^{-d} - d\,(1 + i')^{-(d+1)} z = \frac{pi'}{a} + \frac{pz}{a};$$

by transposition, $d\,(1 + i')^{-(d+1)} z + \frac{p}{a} z = (1 + i')^{-d} - \frac{pi'}{a}$;

dividing each side by $d\,(1 + i')^{-(d+1)} + \frac{p}{a}$,

$$z = \frac{(1 + i')^{-d} - \frac{pi'}{a}}{d(1 + i')^{-(d+1)} + \frac{p}{a}}.$$

Example. What rate of interest is allowed when £923 2 5 wi purchase a perpetuity of £40 per annum, to be entered upon after th expiration of 8 years?

By a few trials the rate of interest is found to be between 3 and 3 per cent; let us make $i' = .03$.

$$\begin{aligned} (1 + i')^{-d} = 1.03^{-8} = {} & .789409 \\ & .692341 = \frac{pi}{a} = \frac{923.1208 \times .03.}{40} \\ & \overline{.097068} = (1 + i')^{-d} - \frac{pi'}{a} \end{aligned}$$

$$d\,(1 + i')^{-(d+1)} + \frac{p}{a} = 8 \times 1.03^{-9} + \frac{923.1208}{40}$$

$$= 8 \times .766417 + 23.07802 = 6.131336 + 23.07802 = 29.2093$$

$$\frac{(1+i')^{-d} - \frac{pi'}{a}}{d\,(1+i')^{-(d+1)} + \frac{p}{a}} = \frac{.097068}{29.20936} = .0033,$$

$$\begin{array}{r} i = .03 + .0033 = .0333 \\ 100 \\ \hline 3.33 \text{ per cent.} \end{array}$$

RENEWAL OF LEASES.

68. The fine to be required for renewing any number of years expired in a lease will be the present value of an annuity deferred for the unexpired term of the lease, and then to continue for the period renewed; we have therefore the following rule:

Rule. From the present value of an annuity to continue from the present time until the expiration of the renewed term subtract the present value of an annuity to expire with the original term of the lease.

Example. Fifty years having expired in a lease for the term of 60 years, what sum should be paid for renewing them, supposing the estate to produce a clear rental of £90 per annum, and the interest of money 5 per cent?

By Table 6,—the value of £1 per annum for 60 years is 18.9293
ditto for 10 years, the unexpired term 7.7217
11.2076
90
£1008 13 8 1008.684

Example 2. Thirty years having expired in a lease for 40 years, required to know the fine for renewing 10 years of the same, supposing the yearly rental £60, and the rate of interest 5 per cent.

40 − 30 = 10 = unexpired time,

10 + 10 = 20 = number of years until the expiration of the renewed term.

By Table 6,—the value of £1 per annum for 20 years 12.4622
ditto, for 10 years, the unexpired time 7.7217
4.7405
60
£284 8 7 284.430

69. The following Tables show the number of years' purchase that ought to be paid at different rates of interest for the renewal of any number of years lapsed in a lease for the original term of 10, 20, 21, and 40 years:

Table for renewing any number of years lapsed in a Lease for Ten

Years.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	8 per cent.	10
1	.7441	.6756	.6139	.5584	.4632	
2	1.5105	1.3782	1.2585	1.1503	.9634	
3	1.2999	2.1088	1.9354	1.7777	1.5037	
4	3.1130	2.8688	2.6469	2.4428	2.0872	
5	3.9505	3.6591	3.3923	3.1477	2.7174	
6	4.8131	4.4810	4.1758	3.8950	3.3980	
7	5.7016	5.3358	4.9985	4.6871	4.1330	
8	6.6167	6.2248	5.8623	5.5267	4.9268	
9	7.5593	7.1494	6.7694	6.4167	5.7842	
10	8.5302	8.1109	7.7217	7.3601	6.7101	

Table for renewing any number of years lapsed in a Lease for Twenty

Years.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	8 per cent.	10
1	.5537	.4564	.3769	.3118	.2145	
2	1.1240	.9310	.7726	.6423	.4463	
3	1.7114	1.4247	1.1881	.9927	.6965	
4	2.3164	1.9380	1.6244	1.3640	.9668	
5	2.9395	2.4719	2.0826	1.7577	1.2587	
6	3.5814	3.0272	2.5636	2.1749	1.5739	
7	4.2425	3.6047	3.0686	2.6172	1.9144	
8	4.9235	4.2053	3.5990	3.0861	2.2821	
9	5.6249	4.8298	4.1558	3.5830	2.6792	
10	6.3473	5.4794	4.7405	4.1098	3.1081	
11	7.0914	6.1550	5.3544	4.6682	3.5713	
12	7.8578	6.8576	5.9990	5.2601	4.0715	
13	8.6472	7.5883	6.6758	5.8875	4.6118	
14	9.4603	8.3482	7.3865	6.5526	5.1953	
15	10.2978	9.1385	8.1327	7.2576	5.8254	
16	11.1604	9.9604	8.9163	8.0048	6.5060	
17	12.0489	10.8152	9.7390	8.7969	7.2410	
18	12.9640	11.7042	10.6028	9.6365	8.0349	
19	13.9066	12.6288	11.5098	10.5265	8.8922	
20	14.8775	13.5903	12.4622	11.4699	9.8181	

Table for renewing any number of years lapsed in a Lease for Twenty-one

Years.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	8 per cent.	10
1	.5375	.4388	.3589	.2942	.1987	
2	1.0912	.8952	.7358	.6060	.4132	
3	1.6615	1.3699	1.1316	.9365	.6449	
4	2.2489	1.8635	1.5471	1.2868	.8952	
5	2.8539	2.3769	1.9834	1.6582	1.1654	
6	3.4771	2,9108	2.4415	2.0518	1.4573	
7	4.1190	3.4660	2.9225	2.4691	1.7726	
8	4.7801	4.0435	3.4276	2.9114	2.1130	
9	5.4610	4.6441	3.9579	3.3802	2.4807	
10	6.1624	5.2687	4.5147	3.8772	2.8778	
11	6.8848	5.9183	5.0994	4.4040	3.3067	
12	7.6289	6.5938	5.7133	4.9624	3.7699	
13	8.3953	7.2964	6.3579	5.5543	4.2702	
14	9.1847	8.0271	7.0348	6.1817	4.8104	
15	9.9978	8.7870	7.7455	6.8468	5.3939	
16	10.8353	9.5773	8.4917	7.5517	6.0241	
17	11.6979	10.3993	9.2752	8.2990	6.7047	
18	12.5864	11.2541	10.0979	9.0911	7.4397	
19	13.5016	12.1431	10.9617	9.9307	8.2335	
20	14.4442	13.0676	11.8688	1.08207	9.0909	
21	15.4150	14.0292	12.8211	1.17641	10.0168	

TABLE for renewing any number of years lapsed in a lease for Forty years.

Years.	3 per cent.	4 per cent.	5 per cent.	6 per cent.	8 per cent.	10 per cent.
1	.3066	.2083	.1420	.0972	.0460	.0221
2	.6223	.4249	.2922	.2003	.0957	.0464
3	.9475	.6502	.4478	.3095	.1494	.0731
4	1.2825	.8845	.6122	.4253	.2074	.1025
5	1.6276	1.1282	.7849	.5481	.2700	.1349
6	1.9829	1.3816	.9662	.6782	.3377	.1705
7	2.3490	1.6451	1.1565	.8161	.4107	.2096
8	2.7260	1.9192	1.3564	.9622	.4896	.2527
9	3.1143	2.2043	1.5663	1.1172	.5748	.3000
10	3.5143	2.5007	1.7866	1.2815	.6668	.3521
11	3.9263	2.8091	2.0180	1.4556	.7662	.4094
12	4.3507	3.1297	2.2610	1.6401	.8735	.4725
13	4.7877	3.4632	2.5161	1.8358	.9894	.5418
14	5.2379	3.8100	2.7839	2.0431	1.1146	.6181
15	5.7016	4.1707	3.0651	2.2629	1.2498	.7020
16	6.1792	4.5458	3.3604	2.4959	1.3959	.7943
17	6.6712	4.9359	3.6705	2.7429	1.5536	.8958
18	7.1779	5.3417	3.9961	3.0047	1.7239	1.0075
19	7.6997	5.7636	4.3379	3.2822	1.9078	1.1304
20	8.2373	6.2024	4.6969	3.5764	2.1065	1.2655
21	8.7910	6.6588	5.0738	3.8882	2.3210	1.4141
22	9.3613	7.1335	5.4695	4.2187	2.5527	1.5776
23	9.9487	7.6271	5.8850	4.5690	2.8030	1.7575
24	10.5537	8.1405	6.3213	4.9404	3.0732	1.9553
25	11.1768	8.6744	6.7794	5.3340	3.3651	2.1730
26	11.8187	9.2297	7.2604	5.7513	3.6804	2.4124
27	12.4798	9.8071	7.7655	6.1936	4.0208	2.6757
28	13.1608	10.4077	8.2958	6.6625	4.3885	2.9654
29	13.8621	11.0323	8.8527	7.1594	4.7856	3.2840
30	14.5846	11.6819	9.4374	7.6862	5.2145	3.6345
31	15.3287	12.3574	10.0513	8.2446	5.6777	4.0200
32	16.0951	13.0600	10.6959	8.8365	6.1780	4.4441
33	16.8845	13.7907	11.3727	9.4639	6.7182	4.9106
34	16.6976	14.5506	12.0834	10.1290	7.3017	5.4238
35	18.5351	15.3410	12.8296	10.8339	7.9319	5.9883
36	19.3977	16.1629	13.6131	11.5812	8.6125	6.6092
37	20.2862	17.0177	14.4358	12.3733	9.3475	7.2922
38	21.2013	17.9067	15.2997	13.2129	10.1413	8.0435
39	22.1439	18.8312	16.2067	14.1029	10.9987	8.8700
40	23.1148	19.7928	17.1591	15.0463	11.9246	9.7791

70. If a lease be granted for n years, subject to a fine of £1 every ν years, the present value of the future fines will be

$$(1+i)^{-\nu} + (1+i)^{-2\nu} + (1+i)^{-3\nu} + \dots + (1+i)^{-(n-\nu)};$$

the sum of which may be found, as in Art. 49. equal to

$$\frac{(1+i)^{-\nu} - (1+i)^{-n}}{1-(1+i)^{-\nu}} = \frac{1-(1+i)^{-(n-\nu)}}{(1+i)^{\nu}-1};$$

there being no fine at the expiration of the lease, and $\frac{n}{\nu}$ being a whole number.

71. When n is infinite the formula becomes $\frac{1}{(1+i)^{\nu}-1}$, the present value of the perpetuity of all such fines.

72. The amount and present values of annuities might have been obtained without the aid of geometrical series, by using the ingenious mode of reasoning which Mr. Milne has given in his treatise.

The annual interest of £1 being i, the present value of a perpetuity of £i per annum will be £1.

$i : 1 :: a : \frac{a}{i}$, the present value of a perpetuity of £a, as in Art. 56.

73. If the perpetuity be deferred n years, the party entitled will, at the expiration of that time, enter upon the perpetuity which is equivalent to a single payment of $\frac{a}{i}$; the present value of a perpetuity of £a deferred n years may therefore be considered as the present value of the sum of £$\frac{a}{i}$, to be received at the end of n years, which is equal to $\frac{a(1+i)^{-n}}{i}$, as in Art. 64.

74. If A be entitled to a perpetuity of £a to be entered upon immediately, and B be entitled to a similar perpetuity, to be entered upon at the expiration of n years, A will be entitled to an immediate annuity for n years more than B, the difference between the value of A's title and of B's will therefore be the present value of an annuity of £a for n years; i. e.

$$\frac{a}{i} - \frac{a(1+i)^{-n}}{i} = a \cdot \frac{1-(1+i)^{-n}}{i}, \text{ as in Art. 50.}$$

75. If the annuity for n years is not to be entered upon until the expiration of d years, the party entitled may be considered as coming then into possession of a sum equal to $a \cdot \frac{1-(1+i)^{-n}}{i}$, which mul-

tiplied by $(1+i)^{-d}$, the present value of £1 due at the end of d years, gives the present value of the deferred annuity, viz.

$$a.\frac{(1+i)^{-d}-(1+i)^{-(d+n)}}{i}, \text{ as in Art. 59.}$$

76. The amount of £1 in n years is $(1+i)^n$; this result is made up of the original £1, an annuity of £i, and the interest on the annuity; if, therefore, the original £1 be subtracted, the difference $(1+i)^n-1$ will be the amount of the annuity £i, with the interest thereon, and the amount of any other annuity will be in the same proportion.

$$i : (1+i)^n - 1 :: a : a.\frac{(1+i)^n-1}{i}, \text{ as in Art. 45.}$$

RECAPITULATION OF FORMULÆ.

SIMPLE INTEREST.

77. Let s = the amount, p the principal, n = number of years, and i = interest of £1 for one year.

$$s = p(1+in),$$

$$p = \frac{s}{1+in},$$

$$n = \frac{s-p}{ip},$$

$$i = \frac{s-p}{np}.$$

DISCOUNT.

78. Let d = the discount, p = the present value, s = the sum due, n = the number of years, i = the interest of £1 for one year.

$$p = \frac{s}{1+in}$$

$$s = p(1+in),$$

$$n = \frac{s-p}{ip},$$

$$i = \frac{s-p}{np},$$

$$d = s - \frac{s}{1+in}.$$

AMOUNT OF ANNUITIES AT SIMPLE INTEREST.

Let $s =$ the amount, $a =$ the annuity, $n =$ the number of year annual interest of £1.

$$s = a\left\{ n + \frac{n(n-1)}{2} i \right\}$$

$$a = \frac{2s}{2n + n(n-1)i};$$

$$n = \frac{\sqrt{8i\frac{s}{a} + (2-i)^2} - (2-i);}{2i}$$

$$i = \frac{2\left(\frac{s}{a} - n\right)}{n(n-1)}.$$

AMOUNT OF SUMS AT COMPOUND INTEREST.

80. Let $s =$ the amount, $p =$ the principal, $n =$ number of $i =$ annual interest of £1.

When the interest is payable yearly.

$$s = p(1+i)^n \qquad \log s = n \log(1+i) + \log p,$$

$$p = s(1+i)^{-n} \qquad \log p = -n \log(1+i) + \mathrm{lo}$$

$$n = \frac{\log s - \log p}{\log(1+i)},$$

$$i = \sqrt[n]{\frac{s}{p}} - 1 \qquad \log \sqrt[n]{\frac{s}{p}} = \frac{\log s - \log p}{n}.$$

81. When interest is convertible m times a year.

$$s = p\left(1 + \frac{i}{m}\right)^{mn} \qquad \log s = mn.\ \log\left(1 + \frac{i}{m}\right) +$$

$$p = s\left(1 + \frac{i}{m}\right)^{-mn} \qquad \log p = -mn \log\left(1 + \frac{i}{m}\right) + \mathrm{l}$$

$$n = \frac{\log s - \log p}{m.\log\left(1 + \frac{i}{m}\right)};$$

$$m = \frac{\log s - \log p}{n \log\left(1 + \frac{i}{m}\right)};$$

$$i = m\left\{\left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1\right\} \qquad \log\left(\frac{s}{p}\right)^{\frac{1}{mn}} = \frac{\log s - \log p}{mn}.$$

PRESENT VALUES OF SUMS AT COMPOUND INTEREST.

82. Let $p =$ the present value, $s =$ the sum due, $n =$ the number of years, $i =$ the annual interest of £1.

$$p = s(1+i)^{-n} \qquad \log p = -n\log(1+i) + \log s,$$

$$s = p(1+i)^{n} \qquad \log s = n.\log(1+i) + \log p,$$

$$n = \frac{\log s - \log p}{\log(1+i)},$$

$$i = \sqrt[n]{\frac{s}{p}} - 1.$$

83. When interest is convertible m times a year.

$$p = s\left(1+\frac{i}{m}\right)^{-mn} \qquad \log p = -mn\log\left(1+\frac{i}{m}\right) + \log s,$$

$$s = p\left(1+\frac{i}{m}\right)^{mn} \qquad \log s = mn.\log\left(1+\frac{i}{m}\right) + \log p,$$

$$n = \frac{\log s - \log p}{m.\log\left(1+\frac{i}{m}\right)}$$

$$m = \frac{\log s - \log p}{n.\log\left(1+\frac{i}{m}\right)}$$

$$i = m.\left\{\left(\frac{s}{p}\right)^{\frac{1}{mn}} - 1\right\}.$$

AMOUNTS OF ANNUITIES AT COMPOUND INTEREST.

84. Let $s =$ the amount, $a =$ the annuity, $n =$ the number of years, and $i =$ the annual interest of £1.

When annuity and interest are payable once a year—

$$s = a.\frac{(1+i)^n - 1}{i},$$

$$a = \frac{is}{(1+i)^n - 1},$$

$$n = \frac{\log\left(\frac{is}{a} + 1\right)}{\log(1+i)},$$

$$i = \frac{\{12 + (n+1)\beta\}\beta}{12 + 2(n+1)\beta}*, \text{ where } \beta = \left(\frac{s}{an}\right)^{\frac{2}{n-1}} - 1.$$

PRESENT VALUE OF ANNUITIES AT COMPOUND INTEREST.

85. Let $p =$ the present value, $a =$ the annuity, $n =$ the number of years, and $i =$ interest of £1 for one year.

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* For the investigation of this formula see Baily's "Doctrine of Interest and Annuities."

$$p = a.\frac{1 - (1 + i)^{-n}}{i},$$

$$a = \frac{ip}{1 - (1 + i)^{-n}},$$

$$n = \frac{-\log\left(1 - \frac{ip}{a}\right)}{\log(1 + i)},$$

$$i = \frac{\{12 - (n-1)\beta\}\beta}{12 - 2(n - 1)\beta}*;$$

$$\text{where } \beta = \left(\frac{an}{p}\right)^{\frac{2}{n+1}} - 1.$$

86. When the annuity is a perpetuity.

$$p = \frac{a}{i},$$

$$i = \frac{a}{p},$$

$$a = ip.$$

PRESENT VALUES OF DEFERRED ANNUITIES.

87. Let p = the present value, a = the annuity, n = the n of years the annuity is to be received, d = the number of years it ferred, i = the annual interest of £1.

$$p = a.\frac{(1 + i)^{-d} - (1 + i)^{-(d+n)}}{i},$$

$$a = \frac{ip}{(1 + i)^{-d} - (1 + i)^{-(d+n)}},$$

$$n = \frac{-\log\left\{1 - \frac{ip}{a}(1 + i)^{d}\right\}}{\log(1 + i)},$$

$$d = \frac{\log\{1 - (1 + i)^{-n}\} - \log\frac{ip}{a}}{\log(1 + i)},$$

$$i = \frac{\{12\delta - (n^2 - 1)\beta\}\beta}{12 - 2(n^2 - 1)\beta}\dagger,$$

$$\text{where } \delta = 2d + n + 1 \ \& \ \beta = \left(\frac{an}{p}\right)^{\frac{2}{\delta}} - 1.$$

88. When the deferred annuity is a perpetuity.

$$p = \frac{a(1 + i)^{-d}}{i},$$

---

* Vide Baily's "Doctrine of Interest and Annuities."

† Vide do. do.

$$a = pi(1+i)^d,$$

$$d = \frac{\log\left(\frac{a}{ip}\right)}{\log(1+i)},$$

$$i = \frac{\{6+(5d+1)\beta\}\beta}{6+4(2d+1)\beta},$$

$$\text{where } \beta = \left(\frac{p+ad}{p}\right)^{\frac{1}{d}} - 1\,^{*}.$$

PRACTICAL RULES AND EXAMPLES.

SIMPLE INTEREST.

89. To find the interest of a sum for any number of years.

Rule. Multiply the sum by the interest of £1 for one year, and the product by the number of years.

Example 1. What is the interest of £462 10 0 for 6 years at 4 per cent simple interest?

$$\begin{array}{r} 462\ 10\ 0 = 462.5 \\ .04 \\ \hline 18.500 \\ 6 \\ \hline 111.000 \end{array} \quad \text{Answer £111 0 0.}$$

90. *Example* 2. What will £925 amount to in 8 years at $4\frac{1}{2}$ per cent simple interest?

$$\begin{array}{r} 925 \\ .045 \\ \hline 4625 \\ 3700 \\ \hline 41.625 \\ 8 \\ \hline 333.000 \end{array} = \begin{array}{r} \text{£}333\ 0\ 0 = \text{interest,} \\ 925\ 0\ 0 \\ \hline 1258\ 0\ 0\ \text{Answer.} \end{array}$$

91. To find the interest of a given sum for any number of days.

Rule. Find in Table 2 the decimal part of a year corresponding to number of days, multiply it by the sum and by the interest of £1 one year.

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* Baily's "*Doctrine of Interest and Annuities.*"

Example. What is the interest of £500 for 123 days at 5 per cen simple interest?

In Table 2, opposite 123 days, we have .336986
this multiplied by .05
gives .0168493
which multiplied by 500
gives 8.42465 =
Answer £8 8 6.

92. When the interest is to be found for a given number of years and days, prefix the number of years to the decimal parts of a year corresponding to the number of days, and multiply as before.

Example. What is the interest of £500 for 4 years and 123 days at 5 per cent?

Prefixing 4 to the decimal for 123 days, we have 4.336986
this multiplied by .05
gives = .2168493
which multiplied by 500
gives 108.42465 =

£108 8 6 Answer.

93. To find the interest without the aid of the table, multiply twice the rate per cent by the number of days, then multiply the principal by the result and divide by 73000.*

Example. What is the interest of £500 for 123 days at five per cent?

500
10
5000
123
73.000)615.000(8.424 = 8 8 6
584
310
292
180
146
340

Or, instead of dividing by 73000, we may divide first by 100000, then the result by 3, and this quotient again by 10, and the result again by 10, the sum of the quotients will be the interest required.

Required the interest of £715 8 6 for 120 days at 3½ per cent.

715 8 6 = 715.425
7
5007.975
120
100000)600957.
$\frac{1}{3}$ 6.00957
$\frac{1}{10}$ 2.00319
$\frac{1}{10}$ 20032
2003
8.23311 = 8 4 8.

COMPOUND INTEREST.

94. To find the *Amount* of a sum in any number of years.

Look in Table 3, under the given rate per cent opposite the number of years for the amount of £1, then multiply it by the sum of which the amount is required.

Example. Required the amount of £835 in 12 years at 4½ per cent compound interest.

In Table 3, under 4½ per cent opposite 12 years, we find 1.69588
this multiplied by 835
gives 1416.060=
£1416 1 2, the amount required.

95. To find the *Present Value* of a sum to be received at the end of any number of years.

Look in Table 4, under the given rate per cent opposite the number of years for the present value of £1, which multiplied by the sum will give the present value required.

Example. What is the present value of £835 to be received at the end of 12 years, reckoning at 5 per cent compound interest?

In Table 4, under 5 per cent opposite 12 years, we find .556837
which multiplied by 835
gives 464.964=
£464 19 3, the present value required.

ANNUITIES AT COMPOUND INTEREST.

96. To find the amount of an annuity in any number of years.

In Table 5, under the given rate per cent opposite the number of years, find the amount of £1 per annum and multiply by the annuity.

Example. What is the amount of £80 per annum in 12 years, at 4 per cent compound interest?

In Table 5, opposite 12 years under 4 per cent, we find 15.0258
which multiplied by 80
gives 1202.064 =
£1202 1 3.

97. To find the present value of a *Temporary Annuity.*

Find in Table 6 the present value of £1 per annum and multiply i by the annuity.

Example. What is the present value of £80 per annum for 12 year at 4 per cent compound interest?

In Table 6, under 4 per cent opposite to 12 years, we find 9.3850
which multiplied by 80
gives 750.800=
£750 16 0, the present value required.

98. To find what *Annuity* a given sum will purchase.

Divide the sum by the present value of £1 per annum found i Table 6.

Example. What annuity may be purchased for £750 16 0 for 1 years at 4 per cent compound interest?

£
9.385)750.80(80
750.80
......

99. To find the present value of a *Deferred Annuity.*

Find in Table 6 the present value of £1 per annum, to be entere upon immediately, and continued until the expiration of the deferre annuity, and subtract from it the present value of £1 per annum for th term the annuity is deferred.

Example. What is the present value of £60 per annum, to b entered upon at the expiration of 12 years, and then continued for years at 4½ per cent compound interest?

$$12 + 9 = 21.$$

In Table 6 we find the present value of £1 per annum for 21 years .... } 13.4047
for 12 years................................ 9.1186
the difference.......... 4.2861
multiplied by the annuity 60
gives 257.166
= £257 3 4.

100. To find the value of a *Perpetuity*.

Multiply the perpetuity by 100 and divide by the rate per cent.

Example. A person is about to purchase a freehold estate producing £90 per annum, what sum should he give to allow him 4 per cent interest for his money?

The annuity 90
multiplied by 100
gives 9000

which divided by the rate per cent, gives

$$\frac{9000}{4} = £2250.$$

101. To find the present value of a *Deferred Perpetuity*.

Multiply the present value of £1 due at the end of as many years as the perpetuity is deferred, by the perpetuity and by 100, and divide by the rate per cent.

Example. A holds a freehold estate producing £300 per annum, on which he has granted a lease which has 10 years to run, what sum ought B to give him to come into possession of the estate at the end of that time so as to receive 5 per cent interest for his money?

In Table 4 under 5 per cent opposite 10 years, we find ...... } .613913
this multiplied by 300 × 100 = 30000
gives 18417.39
which divided by 5, gives ...... 3683.478 =
£3683 9 7.

TABLE I.

The Decimal Parts of a Pound corresponding to any number of Shillings, &c.

s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.
	¼	.00104167	1	0¼	.05104167	2	0¼	.10104167	3	0¼	.15104167
	½	.00208333	1	0½	.05208333	2	0½	.10208333	3	0½	.15208333
	¾	.003125	1	0¾	.053125	2	0¾	.103125	3	0¾	.153125
	1	.00416667	1	1	.05416667	2	1	.10416667	3	1	.15416667
	1¼	.00520833	1	1¼	.05520833	2	1¼	.10520833	3	1¼	.15520833
	1½	.00625	1	1½	.05625	2	1½	.10625	3	1½	.15625
	1¾	.00729167	1	1¾	.05729167	2	1¾	.10729167	3	1¾	.15729167
	2	.00833333	1	2	.05833333	2	2	.10833333	3	2	.15833333
	2¼	.009375	1	2¼	.059375	2	2¼	.109375	3	2¼	.159375
	2½	.01041667	1	2½	.06041667	2	2½	.11041667	3	2½	.16041667
	2¾	.01145833	1	2¾	.06145833	2	2¾	.11145833	3	2¾	.16145833
	3	.0125	1	3	.0625	2	3	.1125	3	3	.1625
	3¼	.01354167	1	3¼	.06354167	2	3¼	.11354167	3	3¼	.16354167
	3½	.01458333	1	3½	.06458333	2	3½	.11458333	3	3½	.16458333
	3¾	.015625	1	3¾	.065625	2	3¾	.115625	3	3¾	.165625
	4	.01666667	1	4	.06666667	2	4	.11666667	3	4	.16666667
	4¼	.01770833	1	4¼	.06770833	2	4¼	.11770833	3	4¼	.16770833
	4½	.01875	1	4½	.06875	2	4½	.11875	3	4½	.16875
	4¾	.01979167	1	4¾	.06979167	2	4¾	.11979167	3	4¾	.16979167
	5	.02083333	1	5	.07083333	2	5	.12083333	3	5	.17083333
	5¼	.021875	1	5¼	.071875	2	5¼	.121875	3	5¼	.171875
	5½	.02291667	1	5½	.07291667	2	5½	.12291667	3	5½	.17291667
	5¾	.02395833	1	5¾	.07395833	2	5¾	.12395833	3	5¾	.17395833
	6	.025	1	6	.075	2	6	.125	3	6	.175
	6¼	.02604167	1	6¼	.07604167	2	6¼	.12604167	3	6¼	.17604167
	6½	.02708333	1	6½	.07708333	2	6½	.12708333	3	6½	.17708333
	6¾	.028125	1	6¾	.078125	2	6¾	.128125	3	6¾	.178125
	7	.02916667	1	7	.07916667	2	7	.12916667	3	7	.17916667
	7¼	.03020833	1	7¼	.08020833	2	7¼	.13020833	3	7¼	.18020833
	7½	.03125	1	7½	.08125	2	7½	.13125	3	7½	.18125
	7¾	.03229167	1	7¾	.08229167	2	7¾	.13229167	3	7¾	.18229167
	8	.03333333	1	8	.08333333	2	8	.13333333	3	8	.18333333
	8¼	.034375	1	8¼	.084375	2	8¼	.134375	3	8¼	.184375
	8½	.03541667	1	8½	.08541667	2	8½	.13541667	3	8½	.18541667
	8¾	.03645833	1	8¾	.08645833	2	8¾	.13645833	3	8¾	.18645833
	9	.0375	1	9	.0875	2	9	.1375	3	9	.1875
	9¼	.03854167	1	9¼	.08854167	2	9¼	.13854167	3	9¼	.18854167
	9½	.03958333	1	9½	.08958333	2	9½	.13958333	3	9½	.18958333
	9¾	.040625	1	9¾	.090625	2	9¾	.140625	3	9¾	.190625
	10	.04166667	1	10	.09166667	2	10	.14166667	3	10	.19166667
	10¼	.04270833	1	10¼	.09270833	2	10¼	.14270833	3	10¼	.1927083[illegible]
	10½	.04375	1	10½	.09375	2	10½	.14375	3	10½	.19375
	10¾	.04479167	1	10¾	.09479167	2	10¾	.14479167	3	10¾	.1947916[illegible]
	11	.04583333	1	11	.09583333	2	11	.14583333	3	11	.1958333[illegible]
	11¼	.046875	1	11¼	.096875	2	11¼	.146875	3	11¼	.196875
	11½	.04791667	1	11½	.09791667	2	11½	.14791667	3	11½	.1979166[illegible]
	11¾	.04895833	1	11¾	.09895833	2	11¾	.14895833	3	11¾	.1989583[illegible]
1	0	.05	2	0	.1	3	0	.15	4	0	.2

TABLE I.

The Decimal Parts of a Pound, corresponding to any number of Shillings, &c.

s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.
4	0¼	.20104167	5	0¼	.25104167	6	0¼	.30104167	7	0¼	.35104167
4	0½	.20208333	5	0½	.25208333	6	0½	.30208333	7	0½	.35208333
4	0¾	.203125	5	0¾	.253125	6	0¾	.303125	7	0¾	.353125
4	1	.20416667	5	1	.25416667	6	1	.30416667	7	1	.35416667
4	1¼	.20520833	5	1¼	.25520833	6	1¼	.30520833	7	1¼	.35520833
4	1½	.20625	5	1½	.25625	6	1½	.30625	7	1½	.35625
4	1¾	.20729167	5	1¾	.25729167	6	1¾	.30729167	7	1¾	.35729167
4	2	.20833333	5	2	.25833333	6	2	.30833333	7	2	.35833333
4	2¼	.209375	5	2¼	.259375	6	2¼	.309375	7	2¼	.359375
4	2½	.21041667	5	2½	.26041667	6	2½	.31041667	7	2½	.36041667
4	2¾	.21145833	5	2¾	.26145833	6	2¾	.31145833	7	2¾	.36145833
4	3	.2125	5	3	.2625	6	3	.3125	7	3	.3625
4	3¼	.21354167	5	3¼	.26354167	6	3¼	.31354167	7	3¼	.36354167
4	3½	.21458333	5	3½	.26458333	6	3½	.31458333	7	3½	.36458333
4	3¾	.215625	5	3¾	.265625	6	3¾	.315625	7	3¾	.365625
4	4	.21666667	5	4	.26666667	6	4	.31666667	7	4	.36666667
4	4¼	.21770833	5	4¼	.26770833	6	4¼	.31770833	7	4¼	.36770833
4	4½	.21875	5	4½	.26875	6	4½	.31875	7	4½	.36875
4	4¾	.21979167	5	4¾	.26979167	6	4¾	.31979167	7	4¾	.36979167
4	5	.22083333	5	5	.27083333	6	5	.32083333	7	5	.37083333
4	5¼	.221875	5	5¼	.271875	6	5¼	.321875	7	5¼	.371875
4	5½	.22291667	5	5½	.27291667	6	5½	.32291667	7	5½	.37291667
4	5¾	.22395833	5	5¾	.27395833	6	5¾	.32395833	7	5¾	.37395833
4	6	.225	5	6	.275	6	6	.325	7	6	.375
4	6¼	.22604167	5	6¼	.27604167	6	6¼	.32604167	7	6¼	.37604167
4	6½	.22708333	5	6½	.27708333	6	6½	.32708333	7	6½	.37708333
4	6¾	.228125	5	6¾	.278125	6	6¾	.328125	7	6¾	.378125
4	7	.22916667	5	7	.27916667	6	7	.32916667	7	7	.37916667
4	7¼	.23020833	5	7¼	.28020833	6	7¼	.33020833	7	7¼	.38020833
4	7½	.23125	5	7½	.28125	6	7½	.33125	7	7½	.38125
4	7¾	.23229167	5	7¾	.28229167	6	7¾	.33229167	7	7¾	.38229167
4	8	.23333333	5	8	.28333333	6	8	.33333333	7	8	.38333333
4	8¼	.234375	5	8¼	.284375	6	8¼	.334375	7	8¼	.384375
4	8½	.23541667	5	8½	.28541667	6	8½	.33541667	7	8½	.38541667
4	8¾	.23645833	5	8¾	.28645833	6	8¾	.33645833	7	8¾	.38645833
4	9	.2375	5	9	.2875	6	9	.3375	7	9	.3875
4	9¼	.23854167	5	9¼	.28854167	6	9¼	.33854167	7	9¼	.38854167
4	9½	.23958333	5	9½	.28958333	6	9½	.33958333	7	9½	.38958333
4	9¾	.240625	5	9¾	.290625	6	9¾	.340625	7	9¾	.390625
4	10	.24166667	5	10	.29166667	6	10	.34166667	7	10	.39166667
4	10¼	.24270833	5	10¼	.29270833	6	10¼	.34270833	7	10¼	.39270833
4	10½	.24375	5	10½	.29375	6	10½	.34375	7	10½	.39375
4	10¾	.24479167	5	10¾	.29479167	6	10¾	.34479167	7	10¾	.39479167
4	11	.24583333	5	11	.29583333	6	11	.34583333	7	11	.39583333
4	11¼	.246875	5	11¼	.296875	6	11¼	.346875	7	11¼	.396875
4	11½	.24791667	5	11½	.29791667	6	11½	.34791667	7	11½	.39791667
4	11¾	.24895833	5	11¾	.29895833	6	11¾	.34895833	7	11¾	.39895833
5	0	.25	6	0	.3	7	0	.35	8	0	.4

TABLE I.

The Decimal Parts of a Pound, corresponding to any number of Shillings, &c.

s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.
8	0¼	.40104167	9	0¼	.45104167	10	0¼	.50104167	11	0¼	.55104167
8	0½	.40208333	9	0½	.45208333	10	0½	.50208333	11	0½	.55208333
8	0¾	.403125	9	0¾	.453125	10	0¾	.503125	11	0¾	.553125
8	1	.40416667	9	1	.45416667	10	1	.50416667	11	1	.55416667
8	1¼	.40520833	9	1¼	.45520833	10	1¼	.50520833	11	1¼	.55520833
8	1½	.40625	9	1½	.45625	10	1½	.50625	11	1½	.55625
8	1¾	.40729167	9	1¾	.45729167	10	1¾	.50729167	11	1¾	.55729167
8	2	.40833333	9	2	.45833333	10	2	.50833333	11	2	.55833333
8	2¼	.409375	9	2¼	.459375	10	2¼	.509375	11	2¼	.559375
8	2½	.41041667	9	2½	.46041667	10	2½	.51041667	11	2½	.56041667
8	2¾	.41145833	9	2¾	.46145833	10	2¾	.51145833	11	2¾	.56145833
8	3	.4125	9	3	.4625	10	3	.5125	11	3	.5625
8	3¼	.41354167	9	3¼	.46354167	10	3¼	.51354167	11	3¼	.56354167
8	3½	.41458333	9	3½	.46458333	10	3½	.51458333	11	3½	.56458333
8	3¾	.415625	9	3¾	.465625	10	3¾	.515625	11	3¾	.565625
8	4	.41666667	9	4	.46666667	10	4	.51666667	11	4	.56666667
8	4¼	.41770833	9	4¼	.46770833	10	4¼	.51770833	11	4¼	.56770833
8	4½	.41875	9	4½	.46875	10	4½	.51875	11	4½	.56875
8	4¾	.41979167	9	4¾	.46979167	10	4¾	.51979167	11	4¾	.56979167
8	5	.42083333	9	5	.47083333	10	5	.52083333	11	5	.57083333
8	5¼	.421875	9	5¼	.471875	10	5¼	.521875	11	5¼	.571875
8	5½	.42291667	9	5½	.47291667	10	5½	.52291667	11	5½	.57291667
8	5¾	.42395833	9	5¾	.47395833	10	5¾	.52395833	11	5¾	.57395833
8	6	.425	9	6	.475	10	6	.525	11	6	.575
8	6¼	.42604167	9	6¼	.47604167	10	6¼	.52604167	11	6¼	.57604167
8	6½	.42708333	9	6½	.47708333	10	6½	.52708333	11	6½	.57708333
8	6¾	.428125	9	6¾	.478125	10	6¾	.528125	11	6¾	.578125
8	7	.42916667	9	7	.47916667	10	7	.52916667	11	7	.57916667
8	7¼	.43020833	9	7¼	.48020833	10	7¼	.53020833	11	7¼	.58020833
8	7½	.43125	9	7½	.48125	10	7½	.53125	11	7½	.58125
8	7¾	.43229167	9	7¾	.48229167	10	7¾	.53229167	11	7¾	.58229167
8	8	.43333333	9	8	.48333333	10	8	.53333333	11	8	.58333333
8	8¼	.434375	9	8¼	.484375	10	8¼	.534375	11	8¼	.584375
8	8½	.43541667	9	8½	.48541667	10	8½	.53541667	11	8½	.58541667
8	8¾	.43645833	9	8¾	.48645833	10	8¾	.53645833	11	8¾	.58645833
8	9	.4375	9	9	.4875	10	9	.5375	11	9	.5875
8	9¼	.43854167	9	9¼	.48854167	10	9¼	.53854167	11	9¼	.58854167
8	9½	.43958333	9	9½	.48958333	10	9½	.53958333	11	9½	.58958333
8	9¾	.440625	9	9¾	.490625	10	9¾	.540625	11	9¾	.590625
8	10	.44166667	9	10	.49166667	10	10	.54166667	11	10	.59166667
8	10¼	.44270833	9	10¼	.49270833	10	10¼	.54270833	11	10¼	.59270833
8	10½	.44375	9	10½	.49375	10	10½	.54375	11	10½	.59375
8	10¾	.44479167	9	10¾	.49479167	10	10¾	.54479167	11	10¾	.59479167
8	11	.44583333	9	11	.49583333	10	11	.54583333	11	11	.59583333
8	11¼	.446875	9	11¼	.496875	10	11¼	.546875	11	11¼	.596875
8	11½	.44791667	9	11½	.49791667	10	11½	.54791667	11	11½	.59791667
8	11¾	.44895833	9	11¾	.49895833	10	11¾	.54895833	11	11¾	.59895833
9	0	.45	10	0	.5	11	0	.55	12	0	.6

imal Parts of a Pound, corresponding to any Number of Shillings, &c.

Decimal.	s.	d.	Decimal.	s.	d.	Decimal.	s.	d.	Decimal.
60104167	13	0¼	.65104167	14	0¼	.70104167	15	0¼	.75104167
60208333	13	0½	.65208333	14	0½	.70208333	15	0½	.75208333
603125	13	0¾	.653125	14	0¾	.703125	15	0¾	.753125
60416667	13	1	.65416667	14	1	.70416667	15	1	.75416667
60520833	13	1¼	.65520833	14	1¼	.70520833	15	1¼	.75520833
60625	13	1½	.65625	14	1½	.70625	15	1½	.75625
60729167	13	1¾	.65729167	14	1¾	.70729167	15	1¾	.75729167
60833333	13	2	.65833333	14	2	.70833333	15	2	.75833333
609375	13	2¼	.659375	14	2¼	.709375	15	2¼	.759375
61041667	13	2½	.66041667	14	2½	.71041667	15	2½	.76041667
61145833	13	2¾	.66145833	14	2¾	.71145833	15	2¾	.76145833
6125	13	3	.6625	14	3	.7125	15	3	.7625
61354167	13	3¼	.66354167	14	3¼	.71354167	15	3¼	.76354167
61458333	13	3½	.66458333	14	3½	.71458333	15	3½	.76458333
615625	13	3¾	.665625	14	3¾	.715625	15	3¾	.765625
61666667	13	4	.66666667	14	4	.71666667	15	4	.76666667
61770833	13	4¼	.66770833	14	4¼	.71770833	15	4¼	.76770833
61875	13	4½	.66875	14	4½	.71875	15	4½	.76875
61979167	13	4¾	.66979167	14	4¾	.71979167	15	4¾	.76979167
62083333	13	5	.67083333	14	5	.72083333	15	5	.77083333
621875	13	5¼	.671875	14	5¼	.721875	15	5¼	.771875
62291667	13	5½	.67291667	14	5½	.72291667	15	5½	.77291667
62395833	13	5¾	.67395833	14	5¾	.72395833	15	5¾	.77395833
625	13	6	.675	14	6	.725	15	6	.775
62604167	13	6¼	.67604167	14	6¼	.72604167	15	6¼	.77604167
62708333	13	6½	.67708333	14	6½	.72708333	15	6½	.77708333
628125	13	6¾	.678125	14	6¾	.728125	15	6¾	.778125
62916667	13	7	.67916667	14	7	.72916667	15	7	.77916667
63020833	13	7¼	.68020833	14	7¼	.73020833	15	7¼	.78020833
63125	13	7½	.68125	14	7½	.73125	15	7½	.78125
63229167	13	7¾	.68229167	14	7¾	.73229167	15	7¾	.78229167
63333333	13	8	.68333333	14	8	.73333333	15	8	.78333333
634375	13	8¼	.684375	14	8¼	.734375	15	8¼	.784375
63541667	13	8½	.68541667	14	8½	.73541667	15	8½	.78541667
63645833	13	8¾	.68645833	14	8¾	.73645833	15	8¾	.78645833
6375	13	9	.6875	14	9	.7375	15	9	.7875
63854167	13	9¼	.68854167	14	9¼	.73854167	15	9¼	.78854167
63958333	13	9½	.68958333	14	9½	.73958333	15	9½	.78958333
640625	13	9¾	.690625	14	9¾	.740625	15	9¾	.790625
64166667	13	10	.69166667	14	10	.74166667	15	10	.79166667
64270833	13	10¼	.69270833	14	10¼	.74270833	15	10¼	.79270833
64375	13	10½	.69375	14	10½	.74375	15	10½	.79375
64479167	13	10¾	.69479167	14	10¾	.74479167	15	10¾	.79479167
64583333	13	11	.69583333	14	11	.74583333	15	11	.79583333
646875	13	11¼	.696875	14	11¼	.746875	15	11¼	.796875
64791667	13	11½	.69791667	14	11½	.74791667	15	11½	.79791667
64895833	13	11¾	.69895833	14	11¾	.74895833	15	11¾	.79895833
65	14	0	.7	15	0	.75	16	0	.8

TABLE I.

The Decimal Parts of a Pound, corresponding to any Number of Shillings, &c.

s.	*d.*	Decimal.	*s.*	*d.*	Decimal.	*s.*	*d.*	Decimal.	*s.*	*d.*	Decimal.
16	0¼	.80104167	17	0¼	.85104167	18	0¼	.90104167	19	0¼	.95104167
16	0½	.80208333	17	0½	.85208333	18	0½	.90208333	19	0½	.95208333
16	0¾	.803125	17	0¾	.853125	18	0¾	.903125	19	0¾	.953125
16	1	.80416667	17	1	.85416667	18	1	.90416667	19	1	.95416667
16	1¼	.80520833	17	1¼	.85520833	18	1¼	.90520833	19	1¼	.95520833
16	1½	.80625	17	1½	.85625	18	1½	.90625	19	1½	.95625
16	1¾	.80729167	17	1¾	.85729167	18	1¾	.90729167	19	1¾	.95729167
16	2	.80833333	17	2	.85833333	18	2	.90833333	19	2	.95833333
16	2¼	.809375	17	2¼	.859375	18	2¼	.909375	19	2¼	.959375
16	2½	.81041667	17	2½	.86041667	18	2½	.91041667	19	2½	.96041667
16	2¾	.81145833	17	2¾	.86145833	18	2¾	.91145833	19	2¾	.96145833
16	3	.8125	17	3	.8625	18	3	.9125	19	3	.9625
16	3¼	.81354167	17	3¼	.86354167	18	3¼	.91354167	19	3¼	.96354167
16	3½	.81458333	17	3½	.86458333	18	3½	.91458333	19	3½	.96458333
16	3¾	.815625	17	3¾	.865625	18	3¾	.915625	19	3¾	.965625
16	4	.81666667	17	4	.86666667	18	4	.91666667	19	4	.96666667
16	4¼	.81770833	17	4¼	.86770833	18	4¼	.91770833	19	4¼	.96770833
16	4½	.81875	17	4½	.86875	18	4½	.91875	19	4½	.96875
16	4¾	.81979167	17	4¾	.86979167	18	4¾	.91979167	19	4¾	.96979167
16	5	.82083333	17	5	.87083333	18	5	.92083333	19	5	.97083333
16	5¼	.821875	17	5¼	.871875	18	5¼	.921875	19	5¼	.971875
16	5½	.82291667	17	5½	.87291667	18	5½	.92291667	19	5½	.97291667
16	5¾	.82395833	17	5¾	.87395833	18	5¾	.92395833	19	5¾	.97395833
16	6	.825	17	6	.875	18	6	.925	19	6	.975
16	6¼	.82604167	17	6¼	.87604167	18	6¼	.92604167	19	6¼	.97604167
16	6½	.82708333	17	6½	.87708333	18	6½	.92708333	19	6½	.97708333
16	6¾	.828125	17	6¾	.878125	18	6¾	.928125	19	6¾	.978125
16	7	.82916667	17	7	.87916667	18	7	.92916667	19	7	.97916667
16	7¼	.83020833	17	7¼	.88020833	18	7¼	.93020833	19	7¼	.98020833
16	7½	.83125	17	7½	.88125	18	7½	.93125	19	7½	.98125
16	7¾	.83229167	17	7¾	.88229167	18	7¾	.93229167	19	7¾	.98229167
16	8	.83333333	17	8	.88333333	18	8	.93333333	19	8	.98333333
16	8¼	.834375	17	8¼	.884375	18	8¼	.934375	19	8¼	.984375
16	8½	.83541667	17	8½	.88541667	18	8½	.93541667	19	8½	.98541667
16	8¾	.83645833	17	8¾	.88645833	18	8¾	.93645833	19	8¾	.98645833
16	9	.8375	17	9	.8875	18	9	.9375	19	9	.9875
16	9¼	.83854167	17	9¼	.88854167	18	9¼	.93854167	19	9¼	.98854167
16	9½	.83958333	17	9½	.88958333	18	9½	.93958333	19	9½	.98958333
16	9¾	.840625	17	9¾	.890625	18	9¾	.940625	19	9¾	.990625
16	10	.84166667	17	10	.89166667	18	10	.94166667	19	10	.99166667
16	10¼	.84270833	17	10¼	.89270833	18	10¼	.94270833	19	10¼	.99270833
16	10½	.84375	17	10½	.89375	18	10½	.94375	19	10½	.99375
16	10¾	.84479167	17	10¾	.89479167	18	10¾	.94479167	19	10¾	.99479167
16	11	.84583333	17	11	.89583333	18	11	.94583333	19	11	.99583333
16	11¼	.846875	17	11¼	.896875	18	11¼	.946875	19	11¼	.996875
16	11½	.84791667	17	11½	.89791667	18	11½	.94791667	19	11½	.99791667
16	11¾	.84895833	17	11¾	.89895833	18	11¾	.94895833	19	11¾	.99895833
17	0	85	18	0	.9	19	0	.95	20	0	1.

The Decimal parts of a Year, corresponding to any number of Days, &c.

Days.	Decimal.	Days.	Decimal.	Days.	Decimal.	Days.	Decimal.
1	.0027 3973	51	.1397 2603	101	.2767 1233	151	.4136 9863
2	.0054 7945	52	.1424 6575	102	.2794 5205	152	.4164 3836
3	.0082 1918	53	.1452 0548	103	.2821 9178	153	.4191 7808
4	.0109 5890	54	.1479 4521	104	.2849 3151	154	.4219 1781
5	.0136 9863	55	.1506 8493	105	.2876 7123	155	.4246 5753
6	.0164 3836	56	.1534 2466	106	.2904 1096	156	.4273 9726
7	.0191 7808	57	.1561 6438	107	.2931 5068	157	.4301 3699
8	.0219 1781	58	.1589 0411	108	.2958 9041	158	.4328 7671
9	.0246 5753	59	.1616 4384	109	.2986 3014	159	.4356 1644
10	.0273 9726	60	.1643 8356	110	.3013 6986	160	.4383 5616
11	.0301 3699	61	.1671 2329	111	.3041 0959	161	.4410 9589
12	.0328 7671	62	.1698 6301	112	.3068 4932	162	.4438 3562
13	.0356 1644	63	.1726 0274	113	.3095 8904	163	.4465 7534
14	.0383 5616	64	.1753 4247	114	.3123 2877	164	.4493 1507
15	.0410 9589	65	.1780 8219	115	.3150 6849	165	.4520 5479
16	.0438 3562	66	.1808 2192	116	.3178 0822	166	.4547 9452
17	.0465 7534	67	.1835 6164	117	.3205 4795	167	.4575 3425
18	.0493 1507	68	.1863 0137	118	.3232 8767	168	.4602 7397
19	.0520 5479	69	.1890 4110	119	.3260 2740	169	.4630 1370
20	.0547 9452	70	.1917 8082	120	.3287 6712	170	.4657 5342
21	.0575 3425	71	.1945 2055	121	.3315 0685	171	.4684 9315
22	.0602 7397	72	.1972 6027	122	.3342 4658	172	.4712 3288
23	.0630 1370	73	.2000 0000	123	.3369 8630	173	.4739 7260
24	.0657 5342	74	.2027 3973	124	.3397 2603	174	.4767 1233
25	.0684 9315	75	.2054 7945	125	.3424 6575	175	.4794 5205
26	.0712 3288	76	.2082 1918	126	.3452 0548	176	.4821 9178
27	.0739 7260	77	.2109 5890	127	.3479 4521	177	.4849 3151
28	.0767 1233	78	.2136 9863	128	.3506 8493	178	.4876 7123
29	.0794 5205	79	.2164 3836	129	.3534 2466	179	.4904 1096
30	.0821 9178	80	.2191 7808	130	.3561 6438	180	.4931 5068
31	.0849 3151	81	.2219 1781	131	.3589 0411	181	.4958 9041
32	.0876 7123	82	.2246 5753	132	.3616 4384	182	.4986 3014
33	.0904 1096	83	.2273 9726	133	.3643 8356	183	.5013 6986
34	.0931 5068	84	.2301 3699	134	.3671 2329	184	.5041 0959
35	.0958 9041	85	.2328 7671	135	.3698 6301	185	.5068 4932
36	.0986 3014	86	.2356 1644	136	.3726 0274	186	.5095 8904
37	.1013 6986	87	.2383 5616	137	.3753 4247	187	.5123 2877
38	.1041 0959	88	.2410 9589	138	.3780 8219	188	.5150 6849
39	.1068 4932	89	.2438 3562	139	.3808 2192	189	.5178 0822
40	.1095 8904	90	.2465 7534	140	.3835 6164	190	.5205 4795
41	.1123 2877	91	.2493 1507	141	.3863 0137	191	.5232 8767
42	.1150 6849	92	.2520 5479	142	.3890 4110	192	.5260 2740
43	.1178 0822	93	.2547 9452	143	.3917 8082	193	.5287 6712
44	.1205 4795	94	.2575 3425	144	.3945 2055	194	.5315 0685
45	.1232 8767	95	.2602 7397	145	.3972 6027	195	.5342 4658
46	.1260 2740	96	.2630 1370	146	.4000 0000	196	.5369 8630
47	.1287 6712	97	.2657 5342	147	.4027 3973	197	.5397 2603
48	.1315 0685	98	.2684 9315	148	.4054 7945	198	.5424 6575
49	.1342 4658	99	.2712 3288	149	.4082 1918	199	.5452 0548
50	.1369 8630	100	.2739 7260	150	.4109 5890	200	.5479 4521

TABLE II.

The decimal parts of a Year, corresponding to any number of Days, &c.

Days.	Decimal.	Days.	Decimal.	Days.	Decimal.	Days.	Decimal.
201	.5506 8493	251	.6876 7123	301	.8246 5753	351	.9616 438
202	.5534 2466	252	.6904 1096	302	.8273 9726	352	.9643 835
203	.5561 6438	253	.6931 5068	303	.8301 3699	353	.9671 232
204	.5589 0411	254	.6958 9041	304	.8328 7671	354	.9698 630
205	.5616 4384	255	.6986 3014	305	.8356 1644	355	.9726 027
206	.5643 8356	256	.7013 6986	306	.8383 5616	356	.9753 424
207	.5671 2329	257	.7041 0959	307	.8410 9589	357	.9780 821
208	.5698 6301	258	.7068 4932	308	.8438 3562	358	.9808 219
209	.5726 0274	259	.7095 8904	309	.8465 7534	359	.9835 616
210	.5753 4247	260	.7123 2877	310	.8493 1507	360	.9863 013
211	.5780 8219	261	.7150 6849	311	.8520 5479	361	.9890 411
212	.5808 2192	262	.7178 0822	312	.8547 9452	362	.9917 808
213	.5835 6164	263	.7205 4795	313	.8575 3425	363	.9945 205
214	.5863 0137	264	.7232 8767	314	.8602 7397	364	.9972 602
215	.5890 4110	265	.7260 2740	315	.8630 1370	365	1.0000 000
						Year.	
216	.5917 8082	266	.7287 6712	316	.8657 5342	$\frac{1}{16}$	.062500
217	.5945 2055	267	.7315 0685	317	.8684 9315	$\frac{1}{12}$	.083333
218	.5972 6027	268	.7342 4658	318	.8712 3288	$\frac{1}{10}$	.100000
219	.6000 0000	269	.7369 8630	319	.8739 7260	$\frac{1}{8}$	.125000
220	.6027 3973	270	.7397 2603	320	.8767 1233		
221	.6054 7945	271	.7424 6575	321	.8794 5205	$\frac{1}{6}$	.166666
222	.6082 1918	272	.7452 0548	322	.8821 9178	$\frac{3}{16}$	.187500
223	.6109 5890	273	.7479 4521	323	.8849 3151	$\frac{1}{5}$	.200000
224	.6136 9863	274	.7506 8493	324	.8876 7123	$\frac{1}{4}$	.250000
225	.6164 3836	275	.7534 2466	325	.8904 1096		
226	.6191 7808	276	.7561 6438	326	.8931 5068	$\frac{3}{10}$	.300000
227	.6219 1781	277	.7589 0411	327	.8958 9041	$\frac{5}{16}$	.312500
228	.6246 5753	278	.7616 4384	328	.8986 3014	$\frac{1}{3}$	.333333
229	.6273 9726	279	.7643 8356	329	.9013 6986	$\frac{3}{8}$	.375000
230	.6301 3699	280	.7671 2329	330	.9041 0959		
231	.6328 7671	281	.7698 6301	331	.9068 4932	$\frac{2}{5}$	.400000
232	.6356 1644	282	.7726 0274	332	.9095 8904	$\frac{5}{12}$	.416666
233	.6383 5616	283	.7753 4247	333	.9123 2877	$\frac{7}{16}$	.437500
234	.6410 9589	284	.7780 8219	334	.9150 6849	$\frac{1}{2}$	.500000
235	.6438 3562	285	.7808 2192	335	.9178 0822		
236	.6465 7534	286	.7835 6164	336	.9205 4795	$\frac{9}{16}$	.562500
237	.6493 1507	287	.7863 0137	337	.9232 8767	$\frac{7}{12}$	.583333
238	.6520 5479	288	.7890 4110	338	.9260 2740	$\frac{3}{5}$	.600000
239	.6547 9452	289	.7917 8082	339	.9287 6712	$\frac{5}{8}$	.625000
240	.6575 3425	290	.7945 2055	340	.9315 0685		
241	.6602 7397	291	.7972 6027	341	.9342 4658	$\frac{2}{3}$	.666666
242	.6630 1370	292	.8000 0000	342	.9369 8630	$\frac{11}{16}$	.687500
243	.6657 5342	293	.8027 3973	343	.9397 2603	$\frac{7}{10}$	.700000
244	.6684 9315	294	.8054 7945	344	.9424 6575	$\frac{3}{4}$	.750000
245	.6712 3288	295	.8082 1918	345	.9452 0548		
						$\frac{4}{5}$	.800000
246	.6739 7260	296	.8109 5890	346	.9479 4521	$\frac{13}{16}$	.812500
247	.6767 1233	297	.8136 9863	347	.9506 8493	$\frac{5}{6}$	.833333
248	.6794 5205	298	.8164 3836	348	.9534 2466	$\frac{7}{8}$	.875000
249	.6821 9178	299	.8191 7808	349	.9561 6438	$\frac{9}{10}$	.900000
250	.6849 3151	300	.8219 1781	350	.9589 0411	$\frac{11}{12}$	.916666
						$\frac{15}{16}$	.937500

TABLE III.

The amount of £1 in any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
1	1.0200 0000	1.0250 0000	1.0300 0000	1.0350 0000
2	1.0404 0000	1.0506 2500	1.0609 0000	1.0712 2500
3	1.0612 0800	1.0768 9062	1.0927 2700	1.1087 1787
4	1.0824 3216	1.1038 1289	1.1255 0881	1.1475 2300
5	1.1040 8080	1.1314 0821	1.1592 7407	1.1876 8631
6	1.1261 6242	1.1596 9342	1.1940 5230	1.2292 5533
7	1.1486 8567	1.1886 8575	1.2298 7387	1.2722 7926
8	1.1716 5938	1.2184 0290	1.2667 7008	1.3168 0904
9	1.1950 9257	1.2488 6297	1.3047 7318	1.3628 9735
10	1.2189 9442	1.2800 8454	1.3439 1638	1.4105 9876
11	1.2433 7431	1.3120 8666	1.3842 3387	1.4599 6972
12	1.2682 4179	1.3448 8882	1.4257 6089	1.5110 6866
13	1.2936 0663	1.3785 1104	1.4685 3371	1.5639 5606
14	1.3194 7876	1.4129 7382	1.5125 8972	1.6186 9452
15	1.3458 6834	1.4482 9817	1.5579 6742	1.6753 4883
16	1.3727 8570	1.4845 0562	1.6047 0644	1.7339 8604
17	1.4002 4142	1.5216 1826	1.6528 4763	1.7946 7555
18	1.4282 4625	1.5596 5872	1.7024 3306	1.8574 8920
19	1.4568 1117	1.5986 5019	1.7535 0605	1.9225 0132
20	1.4859 4740	1.6386 1644	1.8061 1123	1.9897 8886
21	1.5156 6634	1.6795 8185	1.8602 9457	2.0594 3147
22	1.5459 7967	1.7215 7140	1.9161 0341	2.1315 1158
23	1.5768 9926	1.7646 1068	1.9735 8651	2.2061 1448
24	1.6084 3725	1.8087 2595	2.0327 9411	2.2833 2849
25	1.6406 0599	1.8539 4410	2.0937 7793	2.3632 4498
26	1.6734 1811	1.9002 9270	2.1565 9127	2.4459 5856
27	1.7068 8648	1.9478 0002	2.2212 8901	2.5315 6711
28	1.7410 2421	1.9964 9502	2.2879 2768	2.6201 7196
29	1.7758 4469	2.0464 0739	2.3565 6551	2.7118 7798
30	1.8113 6158	2.0975 6758	2.4272 6247	2.8067 9370
31	1.8475 8882	2.1500 0677	2.5000 8035	2.9050 3148
32	1.8845 4059	2.2037 5694	2.5750 8276	3.0067 0759
33	1.9222 3140	2.2588 5086	2.6523 3524	3.1119 4235
34	1.9606 7603	2.3153 2213	2.7319 0530	3.2208 6033
35	1.9998 8955	2.3732 0519	2.8138 6245	3.3335 9045
36	2.0398 8734	2.4325 3532	2.8982 7833	3.4502 6611
37	2.0806 8509	2.4933 4870	2.9852 2668	3.5710 2543
38	2.1222 9879	2.5556 8242	3.0747 8348	3.6960 1132
39	2.1647 4477	2.6195 7448	3.1670 2698	3.8253 7171
40	2.2080 3966	2.6850 6384	3.2620 3779	3.9592 5972
41	2.2522 0046	2.7521 9043	3.3598 9893	4.0978 3381
42	2.2972 4447	2.8209 9520	3.4606 9589	4.2412 5799
43	2.3431 8936	2.8915 2008	3.5645 1677	4.3897 0202
44	2.3900 5314	2.9638 0808	3.6714 5227	4.5433 4160
45	2.4378 5421	3.0379 0328	3.7815 9584	4.7023 5855
46	2.4866 1129	3.1138 5086	3.8950 4372	4.8669 4110
47	2.5363 4351	3.1916 9713	4.0118 9503	5.0372 8404
48	2.5870 7039	3.2714 8956	4.1322 5188	5.2135 8898
49	2.6388 1179	3.3532 7680	4.2562 1944	5.3960 6459
50	2.6915 8803	3.4371 0872	4.3839 0602	5.5849 2686

TABLE III.

The amount of £1 in any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6
1	1.0400 0000	1.0450 0000	1.0500 0000	1.
2	1.0816 0000	1.0920 2500	1.1025 0000	1.
3	1.1248 6400	1.1411 6612	1.1576 2500	1.
4	1.1698 5856	1.1925 1860	1.2155 0625	1.
5	1.2166 5290	1.2461 8194	1.2762 8156	1.
6	1.2653 1902	1.3022 6012	1.3400 9564	1.
7	1.3159 3178	1.3608 6183	1.4071 0042	1.
8	1.3685 6905	1.4221 0061	1.4774 5544	1.
9	1.4233 1181	1.4860 9514	1.5513 2822	1.
10	1.4802 4428	1.5529 6942	1.6288 9463	1.
11	1.5394 5406	1.6228 5305	1.7103 3936	1.
12	1.6010 3222	1.6958 8143	1.7958 5633	2.
13	1.6650 7351	1.7721 9610	1.8856 4914	2.1
14	1.7316 7645	1.8519 4492	1.9799 3160	2.
15	1.8009 4351	1.9352 8244	2.0789 2818	2.
16	1.8729 8125	2.0223 7015	2.1828 7459	2.
17	1.9479 0050	2.1133 7681	2.2920 1832	2.
18	2.0258 1652	2.2084 7877	2.4066 1923	2.
19	2.1068 4918	2.3078 6031	2.5269 5020	3.
20	2.1911 2314	2.4117 1402	2.6532 9771	3.
21	2.2787 6807	2.5202 4116	2.7859 6259	3.3
22	2.3699 1879	2.6336 5201	2.9252 6072	3.6
23	2.4647 1555	2.7521 6635	3.0715 2376	3.8
24	2.5633 0417	2.8760 1383	3.2250 9994	4.0
25	2.6658 3633	3.0054 3446	3.3863 5494	4.2
26	2.7724 6979	3.1406 7901	3.5556 7269	4.5
27	2.8833 6858	3.2820 0956	3.7334 5632	4.8
28	2.9987 0332	3.4296 9999	3.9201 2914	5.1
29	3.1186 5145	3.5840 3649	4.1161 3560	5.4
30	3.2433 9751	3.7453 1813	4.3219 4238	5.7
31	3.3731 3341	3.9138 5745	4.5380 3949	6.0
32	3.5080 5875	4.0899 8104	4.7649 4147	6.4
33	3.6483 8110	4.2740 3018	5.0031 8854	6.8
34	3.7943 1634	4.4663 6154	5.2533 4797	7.2
35	3.9460 8899	4.6673 4781	5.5160 1537	7.6
36	4.1039 3255	4.8773 7846	5.7918 1614	8.1
37	4.2680 8986	5.0968 6049	6.0814 0694	8.6
38	4.4388 1345	5.3262 1921	6.3854 7729	9.1
39	4.6163 6599	5.5658 9908	6.7047 5115	9.7
40	4.8010 2063	5.8163 6454	7.0399 8871	10.2
41	4.9930 6145	6.0781 0094	7.3919 8815	10.9
42	5.1927 8391	6.3516 1548	7.7615 8755	11.5
43	5.4004 9527	6.6374 3818	8.1496 6693	12 2
44	5.6165 1508	6.9361 2290	8.5571 5028	12.9
45	5.8411 7568	7.2482 4843	8.9850 0779	13.7
46	6.0748 2271	7.5744 1961	9.4342 5818	14.5
47	6.3178 1562	7.9152 6849	9.9059 7109	15.4
48	6.5705 2824	8.2714 5557	10.4012 6965	16.3
49	6.8333 4937	8.6436 7107	10.9213 3313	17.3
50	7.1066 8335	9.0326 3627	11.4673 9978	18.4

TABLE III.

The amount of £1 in any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1.0700 0000	1.0800 0000	1.0900 0000	1.1000 0000
2	1.1449 0000	1.1664 0000	1.1881 0000	1.2100 0000
3	1.2250 4300	1.2597 1200	1.2950 2900	1.3310 0000
4	1.3107 9601	1.3604 8896	1.4115 8161	1.4641 0000
5	1.4025 5173	1.4693 2808	1.5386 2395	1.6105 1000
6	1.5007 3035	1.5868 7432	1.6771 0011	1.7715 6100
7	1.6057 8148	1.7138 2427	1.8280 3912	1.9487 1710
8	1.7181 8618	1.8509 3021	1.9925 6264	2.1435 8881
9	1.8384 5921	1.9990 0463	2.1718 9328	2.3579 4769
10	1.9671 5136	2.1589 2500	2.3673 6367	2.5937 4246
11	2.1048 5195	2.3316 3900	2.5804 2641	2.8531 1671
12	2.2521 9159	2.5181 7012	2.8126 6478	3.1384 2838
13	2.4098 4500	2.7196 2373	3.0658 0461	3.4522 7121
14	2.5785 3415	2.9371 9362	3.3417 2703	3.7974 9834
15	2.7590 3154	3.1721 6911	3.6424 8246	4.1772 4817
16	2.9521 6375	3.4259 4264	3.9703 0588	4.5949 7299
17	3.1588 1521	3.7000 1805	4.3276 3341	5.0544 7028
18	3.3799 3228	3.9960 1950	4.7171 2042	5.5599 1731
19	3.6165 2753	4.3157 0106	5.1416 6125	6.1159 0904
20	3.8696 8446	4.6609 5714	5.6044 1077	6.7274 9995
21	4.1405 6237	5.0338 3372	6.1088 0774	7.4002 4994
22	4.4304 0174	5.4365 4041	6.6586 0043	8.1402 7494
23	4.7405 2986	5.8714 6365	7.2578 7447	8.9543 0243
24	5.0723 6695	6.3411 8074	7.9110 8317	9.8497 3268
25	5.4274 3264	6.8484 7520	8.6230 8066	10.8347 0594
26	5.8073 5292	7.3963 5321	9.3991 5792	11.9181 7654
27	6.2138 6763	7.9840 6147	10.2450 8213	13.1099 9419
28	6.6488 3836	8.6271 0639	11.1671 3952	14.4209 9361
29	7.1142 5705	9.3172 7490	12.1721 8208	15.8630 9297
30	7.6122 5504	10.0626 5689	13.2676 7847	17.4494 0227
31	8.1451 1290	10.8676 6944	14.4617 6953	19.1943 4250
32	8.7152 7080	11.7370 8300	15.7633 2879	21.1137 7675
33	9.3253 3975	12.6760 4963	17.1820 2838	23.2251 5442
34	9.9781 1354	13.6901 3361	18.7284 1093	25.5476 6986
35	10.6765 8148	14.7853 4429	20.4139 6792	28.1024 3685
36	11.4239 4219	15.9681 7184	22.2512 2503	30.9126 8053
37	12.2236 1814	17.2456 2558	24.2538 3528	34.0039 4859
38	13.0792 7141	18.6252 7563	26.4366 8046	37.4043 4344
39	13.9948 2041	20.1152 9768	28.8159 8170	41.1447 7779
40	14.9744 5784	21.7245 2150	31.4094 2005	45.2592 5557
41	16.0226 6989	23.4624 8322	34.2362 6786	49.7851 8112
42	17.1442 5678	25.3394 8187	37.3175 3197	54.7636 9924
43	18.3443 5475	27.3666 4042	40.6761 0984	60.2400 6916
44	19.6284 5959	29.5559 7166	44.3369 5973	66.2640 7608
45	21.0024 5176	31.9204 4939	48.3272 8610	72.8904 8369
46	22.4726 2338	34.4740 8534	52.6767 4185	80.1795 3205
47	24.0457 0702	37.2320 1217	57.4176 4862	88.1974 8526
48	25.7289 0651	40.2105 7314	62.5852 3700	97.0172 3378
49	27.5299 2997	43.4274 1899	68.2179 0833	106.7189 5716
50	29.4570 2506	46.9016 1251	74.3575 2008	117.3908 5288

TABLE III.

The amount of £1 in any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
51	2.7454 1979	3.5230 3644	4.5154 2320	5.7803 9930
52	2.8003 2819	3.6111 1235	4.6508 8590	5.9827 1327
53	2.8563 3475	3.7013 9016	4.7904 1247	6.1921 0824
54	2.9134 6144	3.7939 2491	4.9341 2485	6.4088 3202
55	2.9717 3067	3.8887 7303	5.0821 4859	6.6331 4114
56	3.0311 6529	3.9859 9236	5.2346 1305	6.8653 0108
57	3.0917 8859	4.0856 4217	5.3916 5144	7.1055 8662
58	3.1536 2436	4.1877 8322	5.5534 0098	7.3542 8215
59	3.2166 9685	4.2924 7780	5.7200 0301	7.6116 8203
60	3.2810 3079	4.3997 8975	5.8916 0310	7.8780 9090
61	3.3466 5140	4.5097 8449	6.0683 5120	8.1538 2408
62	3.4135 8443	4.6225 2910	6.2504 0173	8.4392 0793
63	3.4818 5612	4.7380 9233	6.4379 1379	8.7345 8020
64	3.5514 9324	4.8565 4464	6.6310 5120	9.0402 9051
65	3.6225 2311	4.9779 5826	6.8299 8273	9.3567 0068
66	3.6949 7357	5.1024 0721	7.0348 8222	9.6841 8520
67	3.7688 7304	5.2299 6739	7.2459 2868	10.0231 3168
68	3.8442 5050	5.3607 1658	7.4633 0654	10.3739 4129
69	3.9211 3551	5.4947 3449	7.6872 0574	10.7370 2924
70	3.9995 5822	5.6321 0286	7.9178 2191	11.1128 2526
71	4.0795 4939	5.7729 0543	8.1553 5657	11.5017 7414
72	4.1611 4037	5.9172 2806	8.4000 1727	11.9043 3624
73	4.2443 6318	6.0651 5876	8.6520 1778	12.3209 8801
74	4.3292 5045	6.2167 8773	8.9115 7832	12.7522 2259
75	4.4158 3545	6.3722 0743	9.1789 2567	13.1985 5038
76	4.5041 5216	6.5315 1261	9.4542 9344	13.6604 9964
77	4.5942 3521	6.6948 0043	9.7379 2224	14.1386 1713
78	4.6861 1991	6.8621 7044	10.0300 5991	14.6334 6873
79	4.7798 4231	7.0337 2470	10.3309 6171	15.1456 4013
80	4.8754 3916	7.2095 6782	10.6408 9056	15.6757 3754
81	4.9729 4794	7.3898 0701	10.9601 1727	16.2243 8835
82	5.0724 0690	7.5745 5219	11.2889 2079	16.7922 4195
83	5.1738 5504	7.7639 1599	11.6275 8842	17.3799 7041
84	5.2773 3214	7.9580 1389	11.9764 1607	17.9882 6938
85	5.3828 7878	8.1569 6424	12.3357 0855	18.6178 5881
86	5.4905 3635	8.3608 8834	12.7057 7981	19.2694 8386
87	5.6003 4708	8.5699 1055	13.0869 5320	19.9439 1580
88	5.7123 5402	8.7841 5832	13.4795 6180	20.6419 5285
89	5.8266 0110	9.0037 6227	13.8839 4865	21.3644 2120
90	5.9431 3313	9.2288 5633	14.3004 6711	22.1121 7595
91	6.0619 9579	9.4595 7774	14.7294 8112	22.8861 0210
92	6.1832 3570	9.6960 6718	15.1713 6556	23.6871 1568
93	6.3069 0042	9.9384 6886	15.6265 0652	24.5161 6473
94	6.4330 3843	10.1869 3058	16.0953 0172	25.3742 3049
95	6.5616 9919	10.4416 0385	16.5781 6077	26.2623 2856
96	6.6929 3318	10.7026 4395	17.0755 0559	27.1815 1006
97	6.8267 9184	10.9702 1004	17.5877 7076	28.1328 6291
98	6.9633 2768	11.2444 6530	18.1154 0388	29.1175 1311
99	7.1025 9423	11.5255 7693	18.6588 6600	30.1366 2607
100	7.2446 4612	11.8137 1635	19.2186 3198	31.1914 0798

TABLE III.

The amount of £1 in any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	7.3909 5068	9.4391 0490	12.0407 6977	19.5253 6353
52	7.6865 8871	9.8638 6463	12.6428 0826	20.6968 8534
53	7.9940 5226	10.3077 3853	13.2749 4868	21.9386 9846
54	8.3138 1435	10.7715 8677	13.9386 9611	23.2550 2037
55	8.6463 6692	11.2563 0817	14.6356 3092	24.6503 2159
56	8.9922 2160	11.7628 4204	15.3674 1246	26.1293 4089
57	9.3519 1046	12.2921 6993	16.1357 8308	27.6971 0134
58	9.7259 8688	12.8453 1758	16.9425 7224	29.3589 2742
59	10.1150 2636	13.4233 5687	17.7897 0085	31.1204 6307
60	10.5196 2741	14.0274 0793	18.6791 8589	32.9876 9085
61	10.9404 1251	14.6586 4129	19.6131 4519	34.9669 5230
62	11.3780 2901	15.3182 8014	20.5938 0245	37.0649 6944
63	11.8331 5017	16.0076 0275	21.6234 9257	39.2888 6761
64	12.3064 7617	16.7279 4487	22.7046 6720	41.6461 9967
65	12.7987 3522	17.4807 0239	23.8399 0056	44.1449 7165
66	13.3106 8463	18.2673 3400	25.0318 9559	46.7936 6994
67	13.8431 1201	19.0893 6403	26.2834 9036	49.6012 9014
68	14.3968 3649	19.9483 8541	27.5976 6488	52.5773 6755
69	14.9727 0995	20.8460 6276	28.9775 4813	55.7320 0960
70	15.5716 1835	21.7841 3558	30.4264 2553	59.0759 3018
71	16.1944 8309	22.7644 2168	31.9477 4681	62.6204 8599
72	16.8422 6241	23.7888 2066	33.5451 3415	66.3777 1515
73	17.5159 5291	24.8593 1759	35.2223 9086	70.3603 7806
74	18.2165 9102	25.9779 8688	36.9835 1040	74.5820 0074
75	18.9452 5466	27.1469 9629	38.8326 8592	79.0569 2079
76	19.7030 6485	28.3686 1112	40.7743 2022	83.8003 3603
77	20.4911 8744	29.6451 9862	42.8130 3623	88.8283 5619
78	21.3108 3494	30.9792 3256	44.9536 8804	94.1580 5757
79	22.1632 6834	32.3732 9802	47.2013 7244	99.8075 4102
80	23.0497 9907	33.8300 9643	49.5614 4106	105.7959 9348
81	23.9717 9104	35.3524 5077	52.0395 1312	112.1437 5309
82	24.9306 6268	36.9433 1106	54.6414 8877	118.8723 7828
83	25.9278 8918	38.6057 6006	57.3735 6321	126.0047 2097
84	26.9650 0475	40.3430 1926	60.2422 4137	133.5650 0423
85	28.0436 0494	42.1584 5513	63.2543 5344	141.5789 0448
86	29.1653 4914	44.0555 8561	66.4170 7111	150.0736 3875
87	30.3319 6311	46.0380 8696	69.7379 2467	159.0780 5708
88	31.5452 4163	48.1098 0087	73.2248 2090	168.6227 4050
89	32.8070 5129	50.2747 4191	76.8860 6195	178.7401 0493
90	34.1193 3335	52.5371 0530	80.7303 6504	189.4645 1123
91	35.4841 0668	54.9012 7503	84.7668 8329	200.8323 8190
92	36.9034 7095	57.3718 3241	89.0052 2746	212.8823 2482
93	38.3796 0979	59.9535 6487	93.4554 8883	225.6552 6431
94	39.9147 9418	62.6514 7529	98.1282 6327	239.1945 8017
95	41.5113 8594	65.4707 9168	103.0346 7644	253.5462 5498
96	43.1718 4138	68.4169 7730	108.1864 1026	268.7590 3027
97	44.8987 1504	71.4957 4128	113.5957 3077	284.8345 7209
98	46.6946 6364	74.7130 4964	119.2755 1731	301.9776 4642
99	48.5624 5018	78.0751 3687	125.2392 9318	320.0963 0520
100	50.5049 4819	81.5885 1803	131.5012 5784	339.3020 8351

TABLE III.

The amount of £1 in any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per
51	31.5190 1682	50.6537 4151	81.0496 9688	129.12
52	33.7253 4799	54.7060 4083	88.3441 6960	142.04
53	36.0861 2235	59.0825 2410	96.2951 4487	156.24
54	38.6121 5092	63.8091 2603	104.9617 0790	171.87
55	41.3150 0148	68.9138 5611	114.4082 6162	189.05
56	44.2070 5159	74.4269 6460	124.7050 0516	207.96
57	47.3015 4520	80.3811 2177	135.9284 5563	228.76
58	50.6126 5336	86.8116 1151	148.1620 1663	251.63
59	54.1555 3910	93.7565 4043	161.4965 9813	276.80
60	57.9464 2683	101.2570 6367	176.0312 9196	304.48
61	62.0026 7671	109.3576 2876	191.8741 0824	334.92
62	66.3428 6408	118.1062 3906	209.1427 7798	368.42
63	70.9868 6457	127.5547 3819	227.9656 2800	405.26
64	75.9559 4509	137.7591 1724	248.4825 3452	445.79
65	81.2728 6124	148.7798 4662	270.8459 6262	490.37
66	86.9619 6153	160.6822 3435	295.2220 9926	539.40
67	93.0492 9884	173.5368 1310	321.7920 8819	593.34
68	99.5627 4976	187.4197 5814	350.7533 7613	652.68
69	106.5321 4224	202.4133 3880	382.3211 7998	717.95
70	113.9893 9220	218.6064 0590	416.7300 8618	789.74
71	121.9686 4965	236.0949 1837	454.2357 9393	868.72
72	130.5064 5513	254.9825 1184	495.1170 1539	955.59
73	139.6419 0699	275.3811 1279	539.6775 4677	1051.15
74	149.4168 4047	297.4116 0181	588.2485 2598	1156.26
75	159.8760 1931	321.2045 2996	641.1908 9332	1271.89
76	171.0673 4066	346.9008 9235	698.8980 7372	1399.08
77	183.0420 5450	374.6529 6374	761.7989 0035	1538.99
78	195.8549 9832	404.6252 0084	830.3608 0139	1692.89
79	209.5648 4820	436.9952 1691	905.0932 7351	1862.18
80	224.2343 8758	471.9548 3426	986.5516 6813	2048.40
81	239.9307 9471	509.7112 2100	1075.3413 1826	2253.24
82	256.7259 5034	550.4881 1868	1172.1220 3690	2478.56
83	274.6967 6686	594.5271 6818	1277.6130 2022	2726.42
84	293.9255 4054	642.0893 4163	1392.5981 9204	2999.06
85	314.5003 2838	693.4564 8896	1517.9320 2933	3298.96
86	336.5153 5136	748.9330 0808	1654.5459 1196	3628.86
87	360.0714 2596	808.8476 4873	1803.4550 4404	3991.75
88	385.2764 2578	873.5554 6062	1965.7659 9801	4390.92
89	412.2457 7558	943.4398 9747	2142.6849 3783	4830.02
90	441.1029 7987	1018.9150 8927	2335.5265 8223	5313.02
91	471.9801 8846	1100.4282 9641	2545.7239 7463	5844.32
92	505.0188 0166	1188.4625 6013	2774.8391 3235	6428.75
93	540.3701 1777	1283.5395 6494	3024.5746 5426	7071.63
94	578.1960 2602	1386.2227 3013	3296.7863 7314	7778.79
95	618.6697 4784	1497.1205 4854	3593.4971 4672	8556.67
96	661.9766 3019	1616.8901 9242	3916.9118 8993	9412.34
97	708.3149 9430	1746.2414 0782	4269.4339 6002	10353.57
98	757.8970 4390	1885.9407 2044	4653.6830 1643	11388.93
99	810.9498 3697	2036.8159 7808	5072.5144 8790	12527.82
100	867.7163 2556	2199.7612 5632	5529.0407 9181	13780.61

TABLE IV.

The present Value of £1 due at the end of any Number of Years.

ars.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
1	.9803 9216	.9756 0976	.9708 7379	.9661 8357
2	.9611 6878	.9518 1440	.9425 9591	.9335 1070
3	.9423 2233	.9285 9941	.9151 4166	.9019 4270
4	.9238 4543	.9059 5064	.8884 8705	.8714 4223
5	.9057 3081	.8838 5429	.8626 0878	.8419 7317
6	.8879 7138	.8622 9687	.8374 8426	.8135 0064
7	.8705 6018	.8412 6524	.8130 9151	.7859 9096
8	.8534 9037	.8207 4657	.7894 0923	.7594 1156
9	.8367 5527	.8007 2836	.7664 1673	.7337 3097
0	.8203 4830	.7811 9840	.7440 9391	.7089 1881
11	.8042 6304	.7621 4478	.7224 2126	.6849 4571
12	.7884 9318	.7435 5589	.7013 7988	.6617 8330
13	.7730 3253	.7254 2038	.6809 5134	.6394 0415
14	.7578 7502	.7077 2720	.6611 1781	.6177 8179
15	.7430 1473	.6904 6556	.6418 6195	.5968 9062
16	.7284 4581	.6736 2493	.6231 6694	.5767 0591
17	.7141 6256	.6571 9506	.6050 1645	.5572 0378
18	.7001 5937	.6411 6591	.5873 9461	.5383 6114
19	.6864 3076	.6255 2772	.5702 8603	.5201 5569
20	.6729 7133	.6102 7094	.5536 7575	.5025 6588
21	.6597 7582	.5953 8629	.5375 4928	.4855 7090
22	.6468 3904	.5808 6467	.5218 9250	.4691 5063
23	.6341 5592	.5666 9724	.5066 9175	.4532 8563
24	.6217 2149	.5528 7535	.4919 3374	.4379 5713
25	.6095 3087	.5393 9059	.4776 0556	.4231 4699
26	.5975 7928	.5262 3472	.4636 9473	.4088 3767
27	.5858 6204	.5133 9973	.4501 8906	.3950 1224
28	.5743 7455	.5008 7778	.4370 7675	.3816 5434
29	.5631 1231	.4886 6125	.4243 4636	.3687 4815
30	.5520 7089	.4767 4269	.4119 8676	.3562 7841
31	.5412 4597	.4651 1481	.3999 8714	.3442 3035
32	.5306 3330	.4537 7055	.3883 3703	.3325 8971
33	.5202 2873	.4427 0298	.3770 2625	.3213 4271
34	.5100 2817	.4319 0534	.3660 4490	.3104 7605
35	.5000 2761	.4213 7107	.3553 8340	.2999 7686
36	.4902 2315	.4110 9372	.3450 3243	.2898 3272
37	.4806 1093	.4010 6705	.3349 8294	.2800 3161
38	.4711 8719	.3912 8492	.3252 2615	.2705 6194
39	.4619 4822	.3817 4139	.3157 5355	.2614 1250
40	.4528 9042	.3724 3062	.3065 5684	.2525 7247
41	.4440 1021	.3633 4695	.2976 2800	.2440 3137
42	.4353 0413	.3544 8483	.2889 5922	.2357 7910
43	.4267 6875	.3458 3886	.2805 4294	.2278 0590
44	.4184 0076	.3374 0376	.2723 7178	.2201 0231
45	.4101 9680	.3291 7440	.2644 3862	.2126 5924
46	.4021 5373	.3211 4576	.2567 3652	.2054 6787
47	.3942 6836	.3133 1294	.2492 5877	.1985 1968
48	.3865 3761	.3056 7116	.2419 9880	.1918 0645
49	.3789 5844	.2982 1576	.2349 5029	.1853 2024
50	.3715 2788	.2909 4221	.2281 0708	.1790 5337

TABLE IV.

The present Value of £1 due at the end of any Number of Ye

Years.	4 per cent.	4½ per cent.	5 per cent.	6
1	.9615 3846	.9569 3780	.9523 8095	.9
2	.9245 5621	.9157 2995	.9070 2948	.8
3	.8889 9636	.8762 9660	.8638 3760	.8
4	.8548 0419	.8385 6134	.8227 0247	.7
5	.8219 2711	.8024 5105	.7835 2616	.7
6	.7903 1453	.7678 9574	.7462 1540	.7
7	.7599 1781	.7348 2846	.7106 8133	.6
8	.7306 9020	.7031 8513	.6768 3936	.6
9	.7025 8674	.6729 0443	.6446 0892	.5
10	.6755 6417	.6439 2768	.6139 1325	.5
11	.6495 8093	.6161 9874	.5846 7929	.52
12	.6245 9705	.5896 6386	.5568 3742	.49
13	.6005 7409	.5642 7164	.5303 2135	.46
14	.5774 7508	.5399 7286	.5050 6795	.44
15	.5552 6450	.5167 2044	.4810 1710	.41
16	.5339 0818	.4944 6932	.4581 1152	.39
17	.5133 7325	.4731 7639	.4362 9669	.37
18	.4936 2812	.4528 0037	.4155 2065	.35
19	.4746 4242	.4333 0179	.3957 3396	.33
20	.4563 8695	.4146 4286	.3768 8948	.31
21	.4388 3360	.3967 8743	.3589 4236	.29
22	.4219 5539	.3797 0089	.3418 4987	.27
23	.4057 2633	.3633 5013	.3255 7131	.26
24	.3901 2147	.3477 0347	.3100 6791	.24
25	.3751 1680	.3327 3060	.2953 0277	.23
26	.3606 8923	.3184 0248	.2812 4073	.21
27	.3468 1657	.3046 9137	.2678 4832	.20
28	.3334 7747	.2915 7069	.2550 9364	.19
29	.3206 5141	.2790 1502	.2429 4632	.18
30	.3083 1867	.2670 0001	.2313 7745	.17
31	.2964 6026	.2555 0241	.2203 5947	.16
32	.2850 5794	.2444 9991	.2098 6617	.15
33	.2740 9417	.2339 7121	.1998 7254	.14
34	.2635 5209	.2238 9589	.1903 5480	.13
35	.2534 1547	.2142 5444	.1812 9029	.13
36	.2436 6872	.2050 2817	.1726 5741	.12
37	.2342 9685	.1961 9921	.1644 3563	.11
38	.2252 8543	.1877 5044	.1566 0536	.10
39	.2166 2061	.1796 6549	.1491 4797	.10
40	.2082 8904	.1719 2870	.1420 4568	.09
41	.2002 7792	.1645 2507	.1352 8160	.09
42	.1925 7493	.1574 4026	.1288 3962	.08
43	.1851 6820	.1506 6054	.1227 0440	.08
44	.1780 4635	.1441 7276	.1168 6133	.07
45	.1711 9841	.1379 6437	.1112 9651	.07
46	.1646 1386	.1320 2332	.1059 9668	.06
47	.1582 8256	.1263 3810	.1009 4921	.06
48	.1521 9476	.1208 9771	.0961 4211	.06
49	.1463 4112	.1156 9158	.0915 6391	.05
50	.1407 1262	.1107 0965	.0872 0373	.05

TABLE IV.

The present Value of £1 due at the end of any Number of Years.

7 per cent.	8 per cent.	9 per cent.	10 per cent.
.9345 7944	.9259 2593	.9174 3119	.9090 9091
.8734 3873	.8573 3882	.8416 7999	.8264 4628
.8162 9788	.7938 3224	.7721 8348	.7513 1480
.7628 9521	.7350 2985	.7084 2521	.6830 1346
.7129 8618	.6805 8320	.6499 3139	.6209 2132
.6663 4222	.6301 6963	.5962 6733	.5644 7393
.6227 4974	.5834 9040	.5470 3424	.5131 5812
.5820 0910	.5402 6888	.5018 6628	.4665 0738
.5439 3374	.5002 4897	.4604 2778	.4240 9762
.5083 4929	.4631 9349	.4224 1081	.3855 4329
.4750 9280	.4288 8286	.3875 3285	.3504 9390
.4440 1196	.3971 1376	.3555 3473	.3186 3082
.4149 6445	.3676 9792	.3261 7865	.2896 6438
.3878 1724	.3404 6104	.2992 4647	.2633 3125
.3624 4602	.3152 4171	.2745 3804	.2393 9205
.3387 3460	.2918 9047	.2518 6976	.2176 2914
.3165 7439	.2702 6895	.2310 7318	.1978 4467
.2958 6392	.2502 4903	.2119 9374	.1798 5879
.2765 0833	.2317 1206	.1944 8967	.1635 0799
.2584 1900	.2145 4821	.1784 3089	.1486 4363
.2415 1309	.1986 5575	.1636 9806	.1351 3057
.2257 1317	.1839 4051	.1501 8171	.1228 4597
.2109 4688	.1703 1528	.1377 8139	.1116 7816
.1971 4662	.1576 9934	.1264 0494	.1015 2560
.1842 4918	.1460 1790	.1159 6784	.0922 9600
.1721 9549	.1352 0176	.1063 9251	.0839 0545
.1609 3037	.1251 8682	.0976 0781	.0762 7768
.1504 0221	.1159 1372	.0895 4845	.0693 4335
.1405 6282	.1073 2752	.0821 5454	.0630 3941
.1313 6712	.0993 7733	.0753 7114	.0573 0855
.1227 7301	.0920 1605	.0691 4783	.0520 9868
.1147 4113	.0852 0005	.0634 3838	.0473 6244
.1072 3470	.0788 8893	.0582 0035	.0430 5676
.1002 1934	.0730 4531	.0533 9481	.0391 4251
.0936 6294	.0676 3454	.0489 8607	.0355 8410
.0875 3546	.0626 2458	.0449 4135	.0323 4918
.0818 0884	.0579 8572	.0412 3059	.0294 0835
.0764 5686	.0536 9048	.0378 2623	.0267 3486
.0714 5501	.0497 1341	.0347 0296	.0243 0442
.0667 8038	.0460 3093	.0318 3758	.0220 9493
.0624 1157	.0426 2123	.0292 0879	.0200 8630
.0583 2857	.0394 6411	.0267 9706	.0182 6027
.0545 1268	.0365 4084	.0245 8446	.0166 0025
.0509 4643	.0338 3411	.0225 5455	.0150 9113
.0476 1349	.0313 2788	.0206 9224	.0137 1921
.0444 9859	.0290 0730	.0189 8371	.0124 7201
.0415 8747	.0268 5861	.0174 1625	.0113 3819
.0388 6679	.0248 6908	.0159 7821	.0103 0745
.0363 2410	.0230 2693	.0146 5891	.0093 7041
.0339 4776	.0213 2123	.0134 4854	.0085 1855

TABLE IV.

The present Value of £1 due at the end of any Number of Years

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ pe
51	.3642 4302	.2838 4606	.2214 6318	.172
52	.3571 0100	.2769 2298	.2150 1280	.167
53	.3500 9902	.2701 6876	.2087 5029	.161
54	.3432 3433	.2635 7928	.2026 7019	.156
55	.3365 0425	.2571 5052	.1967 6717	.150
56	.3299 0613	.2508 7855	.1910 3609	.145
57	.3234 3738	.2447 5957	.1854 7193	.140
58	.3170 9547	.2387 8982	.1800 6984	.135
59	.3108 7791	.2329 6568	.1748 2508	.131
60	.3047 8227	.2272 8359	.1697 3309	.126
61	.2988 0614	.2217 4009	.1647 8941	.122
62	.2929 4720	.2163 3179	.1599 8972	.118
63	.2872 0314	.2110 5541	.1553 2982	.114
64	.2815 7170	.2059 0771	.1508 0565	.110
65	.2760 5069	.2008 8557	.1464 1325	.106
66	.2706 3793	.1959 8593	.1421 4879	.103
67	.2653 3130	.1912 0578	.1380 0853	.099
68	.2601 2873	.1865 4223	.1339 8887	.096
69	.2550 2817	.1819 9242	.1300 8628	.093
70	.2500 2761	.1775 5358	.1262 9736	.089
71	.2451 2511	.1732 2300	.1226 1880	.086
72	.2403 1874	.1689 9805	.1190 4737	.084
73	.2356 0661	.1648 7611	.1155 7998	.081
74	.2309 8687	.1608 5478	.1122 1357	.078
75	.2264 5771	.1569 3149	.1089 4521	.075
76	.2220 1737	.1531 0389	.1057 7205	.073
77	.2176 6408	.1493 6965	.1026 9131	.070
78	.2133 9616	.1457 2649	.0997 0030	.068
79	.2092 1192	.1421 7218	.0967 9641	.066
80	.2051 0973	.1387 0457	.0939 7710	.063
81	.2010 8797	.1353 2153	.0912 3990	.061
82	.1971 4507	.1320 2101	.0885 8243	.059
83	.1932 7948	.1288 0098	.0860 0236	.057
84	.1894 8969	.1256 5949	.0834 9743	.055
85	.1857 7420	.1225 9463	.0810 6547	.053
86	.1821 3157	.1196 0452	.0787 0434	.051
87	.1785 6036	.1166 8733	.0764 1198	.050
88	.1750 5918	.1138 4130	.0741 8639	.048
89	.1716 2665	.1110 6468	.0720 2562	.046
90	.1682 6142	.1083 5579	.0699 2779	.045
91	.1649 6217	.1057 1297	.0678 9105	.043
92	.1617 2762	.1031 3460	.0659 1364	.042
93	.1585 5649	.1006 1912	.0639 9383	.040
94	.1554 4754	.0981 6500	.0621 2993	.039
95	.1523 9955	.0957 7073	.0603 2032	.038
96	.1494 1132	.0934 3486	.0585 6342	.036
97	.1464 8169	.0911 5596	.0568 5769	.035
98	.1436 0950	.0889 3264	.0552 0164	.034
99	.1407 9363	.0867 6355	.0535 9383	.033
100	.1380 3297	.0846 4737	.0520 3284	.032

TABLE IV.

The present Value of £1 due at the end of any Number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	.1353 0059	.1059 4225	.0830 5117	.0512 1544
52	.1300 9672	.1013 8014	.0790 9635	.0483 1645
53	.1250 9300	.0970 1449	.0753 2986	.0455 8156
54	.1202 8173	.0928 3683	.0717 4272	.0430 0147
55	.1156 5551	.0888 3907	.0683 2640	.0405 6742
56	.1112 0722	.0850 1347	.0650 7276	.0382 7115
57	.1069 3002	.0813 5260	.0619 7406	.0361 0486
58	.1028 1733	.0778 4938	.0590 2291	.0340 6119
59	.0988 6282	.0744 9701	.0562 1230	.0321 3320
60	.0950 6040	.0712 8901	.0535 3552	.0303 1434
61	.0914 0423	.0682 1915	.0509 8621	.0285 9843
62	.0878 8868	.0652 8148	.0485 5830	.0269 7965
63	.0845 0835	.0624 7032	.0462 4600	.0254 5250
64	.0812 5803	.0597 8021	.0440 4381	.0240 1179
65	.0781 3272	.0572 0594	.0419 4648	.0226 5264
66	.0751 2760	.0547 4253	.0399 4903	.0213 7041
67	.0722 3809	.0523 8519	.0380 4670	.0201 6077
68	.0694 5970	.0501 2937	.0362 3495	.0190 1959
69	.0667 8818	.0479 7069	.0345 0948	.0179 4301
70	.0642 1940	.0459 0497	.0328 6617	.0169 2737
71	.0617 4942	.0439 2820	.0313 0111	.0159 6921
72	.0593 7445	.0420 3655	.0298 1058	.0150 6530
73	.0570 9081	.0402 2637	.0283 9103	.0142 1254
74	.0548 9501	.0384 9413	.0270 3908	.0134 0806
75	.0527 8367	.0368 3649	.0257 5150	.0126 4911
76	.0507 5353	.0352 5023	.0245 2524	.0119 3313
77	.0488 0147	.0337 3228	.0233 5737	.0112 5767
78	.0469 2449	.0322 7969	.0222 4512	.0106 2044
79	.0451 1970	.0308 8966	.0211 8582	.0100 1928
80	.0433 8433	.0295 5947	.0201 7698	.0094 5215
81	.0417 1570	.0282 8658	.0192 1617	.0089 1713
82	.0401 1125	.0270 6850	.0183 0111	.0084 1238
83	.0385 6851	.0259 0287	.0174 2963	.0079 3621
84	.0370 8510	.0247 8744	.0165 9965	.0074 8699
85	.0356 5875	.0237 2003	.0158 0919	.0070 6320
86	.0342 8726	.0226 9860	.0150 5637	.0066 6340
87	.0329 6852	.0217 2115	.0143 3940	.0062 8622
88	.0317 0050	.0207 8579	.0136 5657	.0059 3040
89	.0304 8125	.0198 9070	.0130 0626	.0055 9472
90	.0293 0890	.0190 3417	.0123 8691	.0052 7803
91	.0281 8163	.0182 1451	.0117 9706	.0049 7928
92	.0270 9772	.0174 3016	.0112 3530	.0046 9743
93	.0260 5550	.0166 7958	.0107 0028	.0044 3154
94	.0250 5337	.0159 6132	.0101 9074	.0041 8070
95	.0240 8978	.0152 7399	.0097 0547	.0039 4405
96	.0231 6325	.0146 1626	.0092 4331	.0037 2081
97	.0222 7235	.0139 8685	.0088 0315	.0035 1019
98	.0214 1572	.0133 8454	.0083 8395	.0033 1150
99	.0205 9204	.0128 0817	.0079 8471	.0031 2406
100	.0198 0004	.0122 5663	.0076 0449	.0029 4723

TABLE IV.

The present value of £1 due at the end of any Number of Yea

Years.	7 per cent.	8 per cent.	9 per cent.	10
51	.0317 2688	.0197 4188	.0123 3811	.00
52	.0296 5129	.0182 7952	.0113 1937	.00
53	.0277 1148	.0169 2548	.0103 8474	.00
54	.0258 9858	.0156 7174	.0095 2728	.00
55	.0242 0428	.0145 1087	.0087 4063	.00
56	.0226 2083	.0134 3599	.0080 1892	.00
57	.0211 4096	.0124 4073	.0073 5681	.00
58	.0197 5791	.0115 1920	.0067 4937	.00
59	.0184 6533	.0106 6592	.0061 9208	.00
60	.0172 5732	.0098 7585	.0056 8081	.00
61	.0161 2834	.0091 4431	.0052 1175	.00
62	.0150 7321	.0084 6696	.0047 8142	.00
63	.0140 8711	.0078 3977	.0043 8663	.00
64	.0131 6553	.0072 5905	.0040 2443	.00
65	.0123 0423	.0067 2134	.0036 9214	.00
66	.0114 9928	.0062 2346	.0033 8728	.001
67	.0107 4699	.0057 6247	.0031 0760	.001
68	.0100 4392	.0053 3562	.0028 5101	.001
69	.0093 8684	.0049 4039	.0026 1560	.001
70	.0087 7275	.0045 7443	.0023 9963	.001
71	.0081 9883	.0042 3558	.0022 0150	.001
72	.0076 6246	.0039 2184	.0020 1972	.001
73	.0071 6117	.0036 3133	.0018 5296	.000
74	.0066 9269	.0033 6234	.0016 9996	.000
75	.0062 5485	.0031 1328	.0015 5960	.000
76	.0058 4565	.0028 8267	.0014 3082	.000
77	.0054 6323	.0026 6914	.0013 1268	.000
78	.0051 0582	.0024 7142	.0012 0430	.000
79	.0047 7179	.0022 8835	.0011 0486	.000
80	.0044 5962	.0021 1885	.0010 1363	.000
81	.0041 6787	.0019 6190	.0009 2994	.000
82	.0038 9520	.0018 1657	.0008 5315	.000
83	.0036 4038	.0016 8201	.0007 8271	.00
84	.0034 0222	.0015 5742	.0007 1808	.00
85	.0031 7965	.0014 4205	.0006 5879	.00
86	.0029 7163	.0013 3523	.0006 0440	.00
87	.0027 7723	.0012 3633	.0005 5449	.00
88	.0025 9554	.0011 4475	.0005 0871	.00
89	.0024 2574	.0010 5995	.0004 6670	.00
90	.0022 6704	.0009 8144	.0004 2817	.00
91	.0021 1873	.0009 0874	.0003 9282	.00
92	.0019 8012	.0008 4142	.0003 6038	.00
93	.0018 5058	.0007 7910	.0003 3063	.00
94	.0017 2952	.0007 2138	.0003 0333	.00
95	.0016 1637	.0006 6795	.0002 7828	.00
96	.0015 1063	.0006 1847	.0002 5530	.00
97	.0014 1180	.0005 7266	.0002 3422	.00
98	.0013 1944	.0005 3024	.0002 1488	.00
99	.0012 3312	.0004 9096	.0001 9714	.00
100	.0011 5245	.0004 5459	.0001 8086	.00

TABLE V.

mount of £1 *per annum* in any number of Years..

ent.	2½ per cent.	3 per cent.	3½ per cent.
000	1.000000	1.000000	1.000000
000	2.025000	2.030000	2.035000
400	3.075625	3.090900	3.106225
.608	4.152516	4.183627	4.214943
040	5.256329	5.309136	5.362466
121	6.387737	6.468410	6.550152
283	7.547430	7.662462	7.779408
969	8.736116	8.892336	9.051687
628	9.954519	10.159106	10.368496
721	11.203382	11.463879	11.731393
715	12.483466	12.807796	13.141992
090	13.795553	14.192030	14.601962
332	15.140442	15.617790	16.113030
938	16.518953	17.086324	17.676986
417	17.931927	18.598914	19.295681
285	19.380225	20.156881	20.971030
071	20.864730	21.761588	22.705016
312	22.386349	23.414435	24.499691
559	23.946007	25.116868	26.357181
370	25.544658	26.870374	28.279682
317	27.183274	28.676486	30.269471
984	28.862856	30.536780	32.328902
963	30.584427	32.452884	34.460414
362	32.349038	34.426470	36.666528
300	34.157764	36.459264	38.949857
906	36.011708	38.553042	41.313102
324	37.912001	40.709634	43.759060
210	39.859801	42.930923	46.290627
235	41.856296	45.218850	48.910799
079	43.902703	47.575416	51.622677
441	46.000271	50.002678	54.429471
030	48.150278	52.502759	57.334502
570	50.354034	55.077841	60.341210
302	52.612885	57.730177	63.453152
478	54.928207	60.462082	66.674013
367	57.301413	63.275944	70.007603
255	59.733948	66.174223	73.457869
940	62.227297	69.159449	77.028895
238	64.782979	72.234233	80.724906
983	67.402554	75.401260	84.550278
023	70.087617	78.663298	88.509537
223	72.839808	82.023196	92.607371
468	75.660803	85.483892	96.848629
657	78.552323	89.048409	101.238331
710	81.516131	92.719861	105.781673
564	84.554034	96.501457	110.484031
176	87.667885	100.396501	115.350973
519	90.859582	104.408396	120.388257
590	94.131072	108.540648	125.601846
401	97.484349	112.796867	130.997910

TABLE V.

The amount of £1 *per annum* in any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per
1	1.000000	1.000000	1.000000	1.00
2	2.040000	2.045000	2.050000	2.06
3	3.121600	3.137025	3.152500	3.18
4	4.246464	4.278191	4.310125	4.37
5	5.416323	5.470710	5.525631	5.63
6	6.632975	6.716892	6.801913	6.97
7	7.898294	8.019152	8.142008	8.39
8	9.214226	9.380014	9.549109	9.89
9	10.582795	10.802114	11.026564	11.49
10	12.006107	12.288209	12.577893	13.18
11	13.486351	13.841179	14.206787	14.97
12	15.025805	15 464032	15.917127	16.8
13	16.626838	17.159913	17.712983	18.8
14	18.291911	18.932109	19.598632	21.01
15	20.023588	20.784054	21.578564	23.2
16	21.824531	22.719337	23.657492	25.6
17	23.697512	24.741707	25.840366	28.2
18	25.645413	26.855084	28.132385	30.9
19	27.671229	29.063562	30.539004	33.7
20	29.778079	31.371423	33.065954	36.7
21	31.969202	33.783137	35.719252	39.9
22	34.247970	36.303378	38.505214	43.3
23	36.617889	38.937030	41.430475	46.9
24	39.082604	41.689196	44.501999	50.8
25	41.645908	44.565210	47.727099	54.8
26	44.311745	47.570645	51.113454	59.1
27	47.084214	50.711324	54.669126	63.7
28	49.967583	53.993333	58.402583	68.5
29	52.966286	57.423033	62.322712	73.6
30	56.084938	61.007070	66.438848	79.0
31	59.328335	64.752388	70.760790	84.8
32	62.701469	68.666245	75.298829	90.8
33	66.209527	72.756226	80.063771	97.3
34	69 857909	77.030256	85.066959	104.1
35	73.652225	81.496618	90.320307	111.4
36	77.598314	86.163966	95.836323	119.1
37	81.702246	91.041344	101.628139	127.2
38	85.970336	96.138205	107.709546	135.9
39	90.409150	101.464424	114.095023	145.0
40	95.025516	107.030323	120.799774	154.7
41	99.826536	112.846688	127.839763	165.0
42	104.819598	118.924789	135.231751	175.9
43	110.012382	125.276404	142.993339	187.5
44	115.412877	131.913842	151.143006	199.7
45	121.029392	138.849965	159.700156	212.7
46	126.870568	146.098214	168.685164	226.5
47	132.945390	153.672633	178.119422	241.0
48	139.263206	161.587902	188.025393	256.5
49	145.833734	169.859357	198.426663	272.9
50	152.667084	178.503028	209.347996	290.3

TABLE V.

The amount of £1 per annum in any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1.000000	1.000000	1.000000	1.000000
2	2.070000	2.080000	2.090000	2.100000
3	3.214900	3.246400	3.278100	3.310000
4	4.439943	4.506112	4.573129	4.641000
5	5.750739	5.866601	5.984711	6.105100
6	7.153291	7.335929	7.523335	7.715610
7	8.654021	8.922803	9.200435	9.487171
8	10.259803	10.636628	11.028474	11.435888
9	11.977989	12.487558	13.021036	13.579477
10	13.816448	14.486562	15.192930	15.937425
11	15.783599	16.645487	17.560293	18.531167
12	17.888451	18.977126	20.140720	21.384284
13	20.140643	21.495297	22.953385	24.522712
14	22.550488	24.214920	26.019189	27.974983
15	25.129022	27.152114	29.360916	31.772482
16	27.888054	30.324283	33.003399	35.949730
17	30.840217	33.750226	36.973705	40.544703
18	33.999033	37.450244	41.301338	45.599173
19	37.378965	41.446263	46.018458	51.159090
20	40.995492	45.761964	51.160120	57.274999
21	44.865177	50.422921	56.764530	64.002499
22	49.005739	55.456755	62.873338	71.402749
23	53.436141	60.893296	69.531939	79.543024
24	58.176671	66.764759	76.789813	88.497327
25	63.249038	73.105940	84.700896	98.347059
26	68.676470	79.954415	93.323977	109.181765
27	74.483823	87.350768	102.723135	121.099942
28	80.697691	95.338830	112.968217	134.209936
29	87.346529	103.965936	124.135356	148.630930
30	94.460786	113.283211	136.307539	164.494023
31	102.073041	123.345868	149.575217	181.943425
32	110.218154	134.213537	164.036987	201.137767
33	118.933425	145.950620	179.800315	222.251544
34	128.258765	158.626670	196.982344	245.476699
35	138.236878	172.316804	215.710755	271.024368
36	148.913460	187.102148	236.124723	299.126805
37	160.337402	203.070320	258.375948	330.039486
38	172.561020	220.315945	282.629783	364.043434
39	185.640292	238.941221	309.066463	401.447778
40	199.635112	259.056519	337.882445	442.592556
41	214.609570	280.781040	369.291865	487.851811
42	230.632240	304.243523	403 528133	537·636992
43	247.776496	329.583005	440.845665	592.400692
44	266.120851	356.949646	481.521775	652.640761
45	285.749311	386.505617	525.858731	718.904837
46	306.751763	418.426067	574.186021	791.795321
47	329.224386	452.900152	626.862762	871.974853
48	353.270093	490.132164	684.280411	960.172338
49	378.999000	530.342737	746.865648	1057.189572
50	406.528929	573.770156	815.083556	1163.908529

TABLE V.

The amount of £1 *per annum* in any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ p
51	87.270989	100.921458	117.180773	136.
52	90.016409	104.444494	121.696197	142.
53	92.816737	108.055606	126.347082	148.
54	95.673072	111.756996	131.137495	154.
55	98.586534	115.550921	136.071620	160.
56	101.558264	119.439694	141.153768	167.
57	104.589430	123.425687	146.388381	174.
58	107.681218	127.511329	151.780033	181.
59	110.834843	131.699112	157.333434	188.
60	114.051539	135.991590	163.053437	196.
61	117.332570	140.391380	168.945040	204.
62	120.679222	144.901164	175.013391	212.
63	124.092806	149.523693	181.263793	220.
64	127.574662	154.261786	187.701707	229.
65	131.126155	159.118330	194.332758	238.
66	134.748679	164.096289	201.162741	248.
67	138.443652	169.198696	208.197623	257.
68	142.212525	174.428663	215.443551	267.
69	146.056776	179.789380	222.906858	278.
70	149.977911	185.284114	230.594064	288.
71	153.977469	190.916217	238.511886	300.
72	158.057019	196.689122	246.667242	311.
73	162.218159	202.606351	255.067259	323.
74	166.462522	208.671509	263.719277	335.
75	170.791773	214.888297	272.630856	348.
76	175.207608	221.260504	281.809781	361.7
77	179.711760	227.792017	291.264075	375.3
78	184.305996	234.486818	301.001997	389.5
79	188.992115	241.348988	311.032057	404.1
80	193.771958	248.382713	321.363019	419.3
81	198.647397	255.592280	332.003909	434.9
82	203.620345	262.982087	342.964026	451.2
83	208.692752	270.556640	354.252947	467.9
84	213.866607	278.320556	365.880536	485.3
85	219.143939	286.278570	377.856952	503.3
86	224.526818	294.435534	390.192660	521.9
87	230.017354	302.796422	402.898440	541.2
88	235.617701	311.366333	415.985393	561.1
89	241.330055	320.150491	429.464955	581.8
90	247.156656	329.154253	443.348904	603.2
91	253.099789	338.383110	457.649371	625.3
92	259.161785	347.842687	472.378852	648.2
93	265.345021	357.538755	487.550217	671.8
94	271.651921	367.477223	503.176724	696.4
95	278.084960	377.664154	519.272026	721.7
96	284.646659	388.105758	535.850186	748.0
97	291.339592	398.808402	552.925692	775.2
98	298.166384	409.778612	570.513463	803.3
99	305.129712	421.023077	588.628867	832.4
100	312.232306	432.548654	607.287733	862.6

TABLE V.

The amount of £1 *per annum* in any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	159.773767	187.535665	220.815395	308.756059
52	167.164718	196.974769	232.856165	328.281422
53	174.851306	206.838634	245.498974	348.978308
54	182.845359	217.146373	258.773922	370.917006
55	191.159173	227.917959	272.712618	394.172027
56	199.805540	239.174268	287.348249	418.822348
57	208.797762	250.937110	302.715662	444.951689
58	218.149672	263.229280	318.851445	472.648790
59	227.875659	276.074597	335.794017	502.007718
60	237.990685	289.497954	353.583718	533.128181
61	248.510313	303.525362	372.262904	566.115872
62	259.450725	318.184003	391.876049	601.082824
63	270.828754	333.502283	412.469851	638.147793
64	282.661904	349.509886	434.093344	677.436661
65	294.968381	366.237831	456.798011	719.082861
66	307.767116	383.718533	480.637912	763.227832
67	321.077800	401.985867	505.669807	810.021502
68	334.920912	421.075231	531.953298	859.622792
69	349.317749	441.023617	559.550963	912.200160
70	364.290459	461.869680	588.528511	967.932170
71	379.862077	483.653815	618.954936	1027.008100
72	396.056560	506.418237	650.902683	1089.628586
73	412.898823	530.207057	684.447817	1156.006301
74	430.414776	555.066375	719.670208	1226.366679
75	448.631367	581.044362	756.653718	1300.948680
76	467.576621	608.191358	795.486404	1380.005601
77	487.279686	636.559969	836.260725	1463.805937
78	507.770874	666.205168	879.073761	1552.634293
79	529.081708	697.184401	924.027449	1646.792350
80	551.244977	729.557699	971.228821	1746.599891
81	574.294776	763.387795	1020.790262	1852.395885
82	598.266567	798.740246	1072.829775	1964.539638
83	623.197230	835.683557	1127.471264	2083.412016
84	649.125119	874.289317	1184.844827	2209.416737
85	676.090124	914.632336	1245.087069	2342.981741
86	704.133728	956.790791	1308.341422	2484.560646
87	733.299078	1000.846377	1374.758493	2634.634285
88	763.631041	1046.884464	1444.496418	2793.712342
89	795.176282	1094.994265	1517.721239	2962.335082
90	827.983334	1145.269007	1594.607301	3141.075187
91	862.102667	1197.806112	1675.337666	3330.539698
92	897.586774	1252.707387	1760.104549	3531.372080
93	934.490245	1310.079219	1849.109777	3744.254405
94	972.869854	1370.032784	1942.565265	3969.909669
95	1012.784649	1432.684259	2040.693529	4209.104250
96	1054.296035	1498.155051	2143.728205	4462.650505
97	1097.467876	1566.572028	2251.914615	4731.409535
98	1142.366591	1638.067770	2365.510346	5016.294107
99	1189.061255	1712.780819	2484.785864	5318.271753
100	1237.623705	1790.855956	2610.025157	5638.368059

TABLE V.

The amount of £1 *per annum* in any Number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per
51	435.985955	620.671769	889.441076	1281.
52	467.504971	671.325510	970.490773	1410.
53	501.230319	726.031551	1058.834943	1552.
54	537.316442	785.114075	1155.130088	1708.
55	575.928593	848.923201	1260.091796	1880.
56	617.243594	917.837058	1374.500057	2069.
57	661.450646	992.264022	1499.205063	2277
58	708.752191	1072.645144	1635.133518	2506.
59	759.364844	1159.456755	1783.295535	2758
60	813.520383	1253.213296	1944.792133	3034
61	871.466810	1354.470360	2120.823425	3339
62	933.469487	1463.827988	2312.697533	3674
63	999.812351	1581.934227	2521.840311	4042
64	1070.799216	1709.488966	2749.805939	4447
65	1146.755161	1847.248083	2998.288474	4893
66	1228.028022	1996.027929	3269.134436	5384
67	1314.989983	2156.710164	3564.356535	5923
68	1408.039282	2330.246977	3886.148624	6516
69	1507.602032	2517.666735	4236.902000	7169
70	1614.134174	2720.080074	4619.223180	7887
71	1728.123566	2938.686480	5035.953266	8677
72	1850.092216	3174.781398	5490.189060	9545
73	1980.598671	3429.763910	5985.306075	10501
74	2120.240578	3705.145023	6524.983622	11552
75	2269.657419	4002.556624	7113.232148	12708
76	2429.533438	4323.761154	7754.423041	13980
77	2600.600779	4670.662047	8453.321115	15379
78	2783.642833	5045.315011	9215.120015	16918
79	2979.497831	5449.940211	10045.480817	18611
80	3189.062680	5886.935428	10950.574090	20474
81	3413.297067	6358.890263	11937.125758	22522
82	3653.227862	6868.601484	13012.467077	24775
83	3909.953812	7419.089602	14184.589114	27254
84	4184.650579	8013.616770	15462.202134	29980
85	4478.576120	8655.706112	16854.800326	32979
86	4793.076448	9349.162601	18372.732355	36278
87	5129.591799	10098.095609	20027.278267	39907
88	5489.663225	10906.943258	21830.733311	43899
89	5874.939651	11780.498718	23796.499309	48290
90	6287.185427	12723.938616	25939.184247	53120.
91	6728.288407	13742.853705	28274.710829	58433.
92	7200.268595	14843.282002	30820.434804	64277
93	7705.287397	16031.744562	33595.273936	70706.
94	8245.657515	17315.284127	36619.848590	77777
95	8823.853541	18701.506857	39916.634964	85556.
96	9442.523288	20198.627405	43510.132110	94113.
97	10104.499919	21815.517598	47427.044000	103525
98	10812.814913	23561.759006	51696.477960	113879
99	11570.711957	25447.699726	56350.160977	125268
100	12381.661794	27484.515704	61422.675465	137796.

TABLE VI.

The present Value of £1 *per annum* for any Number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
1	.980392	.975610	.970874	.966184
2	1.941561	1.927424	1.913470	1.899694
3	2.883883	2.856024	2.828611	2.801637
4	3.807729	3.761974	3.717098	3.673079
5	4.713460	4.645828	4.579707	4.515052
6	5.601431	5.508125	5.417191	5.328553
7	6.471991	6.349391	6.230283	6.114544
8	7.325481	7.170137	7.019692	6.873956
9	8.162237	7.970866	7.786109	7.607687
10	8.982585	8.752064	8.530203	8.316605
11	9.786848	9.514209	9.252624	9.001551
12	10.575341	10.257765	9.954004	9.663334
13	11.348374	10.983185	10.634955	10.302738
14	12.106249	11.690912	11.296073	10.920520
15	12.849264	12.381378	11.937935	11.517411
16	13.577709	13.055003	12.561102	12.094117
17	14.291872	13.712198	13.166118	12.651321
18	14.992031	14.353364	13.753513	13.189682
19	15.678462	14.978891	14.323799	13.709837
20	16.351433	15.589162	14.877475	14.212403
21	17.011209	16.184549	15.415024	14.697974
22	17.658048	16.765413	15.936917	15.167125
23	18.292204	17.332110	16.443608	15.620410
24	18.913926	17.884986	16.935542	16.058368
25	19.523456	18.424376	17.413148	16.481515
26	20.121036	18.950611	17.876842	16.890352
27	20.706898	19.464011	18.327031	17.285365
28	21.281272	19.964889	18.764108	17.667019
29	21.844385	20.453550	19.188455	18.035767
30	22.396456	20.930293	19.600441	18.392045
31	22.937702	21.395407	20.000428	18.736276
32	23.468335	21.849178	20.388766	19.068865
33	23.988564	22.291881	20.765792	19.390208
34	24.498592	22.723786	21.131837	19.700684
35	24.998619	23.145157	21.487220	20.000661
36	25.488842	23.556251	21.832252	20.290494
37	25.969453	23.957318	22.167235	20.570525
38	26.440641	24.348603	22.492462	20.841087
39	26.902589	24.730344	22.808215	21.102500
40	27.355479	25.102775	23.114772	21.355072
41	27.799489	25.466122	23.412400	21.599104
42	28.234794	25.820607	23.701359	21.834883
43	28.661562	26.166446	23.981902	22.062689
44	29.079963	26.503849	24.254274	22.282791
45	29.490160	26.833024	24.518713	22.495450
46	29.892314	27.154170	24.775449	22.700918
47	30.286582	27.467483	25.024708	22.899438
48	30.673120	27.773154	25.266707	23.091244
49	31.052078	28.071369	25.501657	23.276564
50	31.423606	28.362312	25.729764	23.455618

TABLE VI.

The present Value of £1 *per annum* for any Number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 pe
1	.961538	.956938	.952381	.9
2	1.886095	1.872668	1.859410	1.
3	2.775091	2.748964	2.723248	2.
4	3.629895	3.587526	3.545951	3.
5	4.451822	4.389977	4.329477	4.
6	5.242137	5.157872	5.075692	4.
7	6.002055	5.892701	5.786373	5.
8	6.732745	6.595886	6.463213	6.
9	7.435332	7.268790	7.107822	6.
10	8.110896	7.912718	7.721735	7.
11	8.760477	8.528917	8.306414	7.
12	9.385074	9.118581	8.863252	8.
13	9.985648	9.682852	9.393573	8.
14	10.563123	10.222825	9.898641	9.
15	11.118387	10.739546	10.379658	9.
16	11.652296	11.234015	10.837770	10.1
17	12.165669	11.707191	11.274066	10.
18	12.659297	12.159992	11.689587	10.
19	13.133939	12.593294	12.085321	11.1
20	13.590326	13.007936	12.462210	11.
21	14.029160	13.404724	12.821153	11.7
22	14.451115	13.784425	13.163003	12.
23	14.856842	14.147775	13.488574	12.
24	15.246963	14.495478	13.798642	12.5
25	15.622080	14.828209	14.093945	12.7
26	15.982769	15.146611	14.375185	13.0
27	16.329586	15.451303	14.643034	13.2
28	16.663063	15.742874	14.898127	13.4
29	16.983715	16.021889	15.141074	13.5
30	17.292033	16.288889	15.372451	13.7
31	17.588494	16.544391	15.592811	13.9
32	17.873552	16.788891	15.802677	14.0
33	18.147646	17.022862	16.002549	14.2
34	18.411198	17.246758	16.192904	14.3
35	18.664613	17.461012	16.374194	14.4
36	18.908282	17.666041	16.546852	14.6
37	19.142579	17.862240	16.711287	14.7
38	19.367864	18.049990	16.867893	14.8
39	19.584485	18.229656	17.017041	14.9
40	19.792774	18.401584	17.159086	15.0
41	19.993052	18.566109	17.294368	15.1
42	20.185627	18.723550	17.423208	15.2
43	20.370795	18.874210	17.545912	15.3
44	20.548841	19.018383	17.662773	15.3
45	20.720040	19.156347	17.774070	15.4
46	20.884654	19.288371	17.880067	15.5
47	21.042936	19.414709	17.981016	15.5
48	21.195131	19.535607	18.077158	15.6
49	21.341472	19.651298	18.168722	15.7
50	21.482185	19.762008	18.255925	15.7

TABLE VI.

The present Value of £1 *per annum* for any Number of Years.

Years	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	.934579	.925926	.917431	.909091
2	1.808018	1.783265	1.759111	1.735537
3	2.624316	2.577097	2.531295	2.486852
4	3.387211	3.312127	3.239720	3.169865
5	4.100197	3.992710	3.889651	3.790787
6	4.766540	4.622880	4.485919	4.355261
7	5.389289	5.206370	5.032953	4.868419
8	5.971299	5.746639	5.534819	5.334926
9	6.515232	6.246888	5.995247	5.759024
10	7.023582	6.710081	6.417658	6.144567
11	7.498674	7.138964	6.805191	6.495061
12	7.942686	7.536078	7.160725	6.813692
13	8.357651	7.903776	7.486904	7.103356
14	8.745468	8.244237	7.786150	7.366687
15	9.107914	8.559479	8.060688	7.606080
16	9.446649	8.851369	8.312558	7.823709
17	9.763223	9.121638	8.543631	8.021553
18	10.059087	9.371887	8.755625	8.201412
19	10.335595	9.603599	8.950115	8.364920
20	10.594014	9.818147	9.128546	8.513564
21	10.835527	10.016803	9.292244	8.648694
22	11.061241	10.200744	9.442425	8.771540
23	11.272187	10.371059	9.580207	8.883218
24	11.469334	10.528758	9.706612	8.984744
25	11.653583	10.674776	9.822580	9.077040
26	11.825779	10.809978	9.928972	9.160945
27	11.986709	10.935165	10.026580	9.237223
28	12.137111	11.051078	10.116128	9.306567
29	12.277674	11.158406	10.198283	9.369606
30	12.409041	11.257783	10.273654	9.426914
31	12.531814	11.349799	10.342802	9.479013
32	12.646555	11.434999	10.406240	9.526376
33	12.753790	11.513888	10.464441	9.569432
34	12.854009	11.586934	10.517835	9.608575
35	12.947672	11.654568	10.566821	9.644159
36	13.035208	11.717193	10.611763	9.676508
37	13.117017	11.775179	10.652993	9.705917
38	13.193473	11.828869	10.690820	9.732651
39	13.264928	11.878582	10.725523	9.756956
40	13.331709	11.924613	10.757360	9.779051
41	13.394120	11.967235	10.786569	9.799137
42	13.452449	12.006699	10.813366	9.817397
43	13.506962	12.043240	10.837951	9.833998
44	13.557908	12.077074	10.860505	9.849089
45	13.605522	12.108402	10.881197	9.862808
46	13.650020	12.137409	10.900181	9.875280
47	13.691608	12.164267	10.917597	9.886618
48	13.730474	12.189136	10.933575	9.896926
49	13.766799	12.212163	10.948234	9.906296
50	13.800746	12.233485	10.961683	9.914814

TABLE VI.

The present Value of £1 *per annum* for any Number of Years

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ p
51	31.787849	28.646158	25.951227	23.
52	32.144950	28.923081	26.166240	23.
53	32.495049	29.193249	26.374990	23.
54	32.838283	29.456829	26.577660	24.
55	33.174788	29.713979	26.774428	24.
56	33.504694	29.964858	26.965464	24.
57	33.828131	30.209617	27.150936	24.
58	34.145227	30.448407	27.331005	24.
59	34.456104	30.681373	27.505831	24.
60	34.760887	30.908656	27.675564	24.
61	35.059693	31.130397	27.840353	25.
62	35.352640	31.346728	28.000343	25.
63	35.639843	31.557784	28.155673	25.
64	35.921415	31.763691	28.306478	25.
65	36.197466	31.964577	28.452891	25.
66	36.468104	32.160563	28.595040	25.
67	36.733435	32.351769	28.733049	25.
68	36.993564	32.538311	28.867038	25.
69	37.248592	32.720303	28.997124	25.
70	37.498619	32.897857	29.123421	26.
71	37.743744	33.071080	29.246040	26.
72	37.984063	33.240078	29.365087	26.
73	38.219670	33.404954	29.480667	26.
74	38.450657	33.565809	29.592881	26.
75	38.677114	33.722740	29.701826	26.
76	38.899132	33.875844	29.807598	26.
77	39.116796	34.025214	29.910290	26.
78	39.330192	34.170940	30.009990	26.
79	39.539404	34.313113	30.106786	26.
80	39.744514	34.451817	30.200763	26.
81	39.945602	34.587139	30.292003	26.
82	40.142747	34.719160	30.380586	26.
83	40.336026	34.847961	30.466588	26.
84	40.525516	34.973620	30.550086	26.
85	40.711290	35.096215	30.631151	27.
86	40.893422	35.215819	30.709855	27.
87	41.071982	35.332507	30.786267	27.
88	41.247041	35.446348	30.860454	27.
89	41.418668	35.557413	30.932479	27.
90	41.586929	35.665768	31.002407	27.
91	41.751891	35.771487	31.070298	27.
92	41.913619	35.874616	31.136212	27.
93	42.072175	35.975235	31.200206	27.
94	42.227623	36.073400	31.262336	27.
95	42.380023	36.169171	31.322656	27.
96	42.529434	36.262606	31.381219	27.
97	42.675916	36.353762	31.438077	27.
98	42.819525	36.442694	31.493279	27.
99	42.960319	36.529458	31.546872	27.
100	43.098352	36.614105	31.598905	27.
Perp.	50.000000	40.000000	33.333333	28.

TABLE VI.

The present Value of £1 *per annum* for any Number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	21.617485	19.867950	18.338977	15.813076
52	21.747582	19.969330	18.418073	15.861393
53	21.872675	20.066345	18.493403	15.906974
54	21.992957	20.159181	18.565146	15.949976
55	22.108612	20.248021	18.633472	15.990543
56	22.219819	20.333034	18.698545	16.028814
57	22.326749	20.414387	18.760519	16.064919
58	22.429567	20.492236	18.819542	16.098980
59	22.528430	20.566733	18.875754	16.131113
60	22.623490	20.638022	18.929290	16.161428
61	22.714894	20.706241	18.980276	16.190026
62	22.802783	20.771523	19.028834	16.217006
63	22.887291	20.833993	19.075080	16.242458
64	22.968549	20.893773	19.119124	16.266470
65	23.046682	20.950979	19.161070	16.289123
66	23.121810	21.005722	19.201019	16.310493
67	23.194048	21.058107	19.239066	16.330654
68	23.263507	21.108236	19.275301	16.349673
69	23.330296	21.156207	19.309810	16.367617
70	23.394515	21.202112	19.342677	16.384544
71	23.456264	21.246040	19.373978	16.400513
72	23.515639	21.288077	19.403788	16.415578
73	23.572730	21.328303	19.432179	16.429791
74	23.627625	21.366797	19.459218	16.443199
75	23.680408	21.403634	19.484970	16.455848
76	23.731162	21.438884	19.509495	16.467781
77	23.779963	21.472616	19.532853	16.479039
78	23.826888	21.504896	19.555098	16.489659
79	23.872008	21.535785	19.576284	16.499679
80	23.915392	21.565345	19.596460	16.509131
81	23.957108	21.593632	19.615677	16.518048
82	23.997219	21.620700	19.633978	16.526460
83	24.035787	21.646603	19.651407	16.534396
84	24.072872	21.671390	19.668007	16.541883
85	24.108531	21.695110	19.683816	16.548947
86	24.142818	21.717809	19.698873	16.555610
87	24.175787	21.739530	19.713212	16.561896
88	24.207487	21.760316	19.726869	16.567827
89	24.237969	21.780207	19.739875	16.573421
90	24.267278	21.799241	19.752262	16.578699
91	24.295459	21.817455	19.764059	16.583679
92	24.322557	21.834885	19.775294	16.588376
93	24.348612	21.851565	19.785994	16.592808
94	24.373666	21.867526	19.796185	16.596988
95	24.397756	21.882800	19.805891	16.600932
96	24.420919	21.897417	19.815134	16.604653
97	24.443191	21.911403	19.823937	16.608163
98	24.464607	21.924788	19.832321	16.611475
99	24.485199	21.937596	19.840306	16.614599
100	24.504999	21.949853	19.847910	16.617546
Perp.	25.000000	22.222222	20.000000	16.666667

TABLE VI.

The present Value of £1 *per annum* for any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 p
51	13.832473	12.253227	10.974021	9.
52	13.862124	12.271506	10.985340	9.
53	13.889836	12.288432	10.995725	9.
54	13.915735	12.304103	11.005252	9.
55	13.939939	12.318614	11.013993	9.
56	13.962560	12.332050	11.022012	9.
57	13.983701	12.344491	11.029369	9.
58	14.003459	12.356010	11.036118	9.
59	14.021924	12.366676	11.042310	9.
60	14.039181	12.376552	11.047991	9.
61	14.055309	12.385696	11.053203	9.
62	14.070383	12.394163	11.057984	9.
63	14.084470	12.402003	11.062371	9.
64	14.097635	12.409262	11.066395	9.
65	14.109940	12.415983	11.070087	9.
66	14.121439	12.422207	11.073475	9.
67	14.132186	12.427969	11.076582	9.
68	14.142230	12.433305	11.079433	9.
69	14.151617	12.438245	11.082049	9.
70	14.160389	12.442820	11.084449	9.
71	14.168588	12.447055	11.086650	9.
72	14.176251	12.450977	11.088670	9.
73	14.183412	12.454608	11.090523	9.
74	14.190104	12.457971	11.092223	9.
75	14.196359	12.461084	11.093782	9.
76	14.202205	12.463967	11.095213	9.9
77	14.207668	12.466636	11.096526	9.9
78	14.212774	12.469107	11.097730	9.9
79	14.217546	12.471396	11.098835	9.9
80	14.222005	12.473514	11.099849	9.9
81	14.226173	12.475476	11.100778	9.9
82	14.230069	12.477293	11.101632	9.9
83	14.233709	12.478975	11.102414	9.9
84	14.237111	12.480532	11.103132	9.9
85	14.240291	12.481974	11.103791	9.9
86	14.243262	12.483310	11.104396	9.9
87	14.246040	12.484546	11.104950	9.9
88	14.248635	12.485691	11.105459	9.9
89	14.251061	12.486751	11.105926	9.9
90	14.253328	12.487732	11.106354	9.9
91	14.255447	12.488641	11.106746	9.9
92	14.257427	12.489482	11.107107	9.9
93	14.259277	12.490261	11.107438	9.9
94	14.261007	12.490983	11.107741	9.9
95	14.262623	12.491951	11.108019	9.9
96	14.264134	12.492269	11.108274	9.9
97	14.265546	12.492842	11.108509	9.9
98	14.266865	12.493372	11.108724	9.9
99	14.268098	12.493863	11.108921	9.9
100	14.269251	12.494318	11.109102	9.9
Perp.	14.285714	12.500000	11.111111	10.0

TABLE VII.

The Annuity which £1 will purchase for any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
1	1.02000000	1.02500000	1.03000000	1.03500000
2	0.51504950	0.51882716	0.52261084	0.52640049
3	.34675467	.35013717	.35353036	.35693418
4	.26262375	.26581788	.26902705	.27225114
5	.21215839	.21524686	.21835457	.22148137
6	.17852581	.18154997	.18459750	.18766821
7	.15451195	.15749543	.16050635	.16351449
8	.13650980	.13946735	.14245639	.14547665
9	.12251544	.12545689	.12843386	.13144601
10	.11132653	.11425876	.11723051	.12024137
11	.10217794	.10510596	.10807745	.11109197
12	.09455960	.09748713	.10046209	.10348395
13	.08811835	.09104827	.09402954	.09706157
14	.08260197	.08553653	.08852634	.09157073
15	.07782547	.08076646	.08376658	.08682507
16	.07365013	.07659899	.07961085	.08268483
17	.06996984	.07292777	.07595253	.07904313
18	.06670210	.06967008	.07270870	.07581684
19	.06378177	.06676062	.06981388	.07294033
20	.06115672	.06414713	.06721571	.07036108
21	.05878477	.06178733	.06487178	.06803659
22	.05663140	.05964660	.06274739	.06593207
23	.05466810	.05769638	.06081390	.06401880
24	.05287110	.05591282	.05904742	.06227283
25	.05122044	.05427592	.05742787	.06067404
26	.04969923	.05276875	.05593829	.05920540
27	.04829309	.05137687	.05456421	.05785241
28	.04698967	.05008793	.05329323	.05660265
29	.04577835	.04889127	.05211467	.05544538
30	.04464992	.04777764	.05101926	.05437133
31	.04359635	.04673900	.04999893	.05337240
32	.04261061	.04576831	.04904662	.05244150
33	.04168653	.04485938	.04815612	.05157242
34	.04081867	.04400675	.04732196	.05075966
35	.04000221	.04320558	.04653929	.04999835
36	.03923285	.04245158	.04580379	.04928416
37	.03850678	.04174090	.04511162	.04861325
38	.03782057	.04107012	.04445934	.04798214
39	.03717114	.04043615	.04384385	.04738775
40	.03655575	.03983623	.04326238	.04682728
41	.03597188	.03926786	.04271241	.04629822
42	.03541729	.03872876	.04219168	.04579828
43	.03488993	.03821688	.04169811	.04532539
44	.03438794	.03773037	.04122985	.04487768
45	.03390962	.03726751	.04078518	.04445343
46	.03345342	.03682676	.04036254	.04405108
47	.03301792	.03640669	.03996051	.04366919
48	.03260184	.03600599	.03957777	.04330646
49	.03220396	.03562348	.03921314	.04296167
50	.03182321	.03525806	.03886546	.04263371

TABLE VII.

The Annuity which £1 will purchase for any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 p
1	1.04000000	1.04500000	1.05000000	1.0
2	0.53019608	0.53399756	0.53780488	0.5
3	.36034854	.36377336	.36720856	.3
4	.27549005	.27874365	.28201183	.2
5	.22462711	.22779164	.23097480	.2
6	.19076190	.19387839	.19701747	.2
7	.16660961	.16970147	.17281982	.1
8	.14852783	.15160965	.15472181	.1
9	.13449299	.13757447	.14069008	.1
10	.12329094	.12637882	.12950458	.1
11	.11414904	.11724818	.12038889	.1
12	.10655217	.10966619	.11282541	.11
13	.10014373	.10327535	.10645577	.11
14	.09466897	.09782032	.10102397	.1
15	.08994110	.09311381	.09634229	.1
16	.08582000	.08901537	.09226991	.0
17	.08219852	.08541758	.08869914	.0
18	.07899333	.08223690	.08554622	.0
19	.07613862	.07940734	.08274501	.08
20	.07358175	.07687614	.08024259	.08
21	.07128011	.07460057	.07799611	.08
22	.06919881	.07254565	.07597051	.08
23	.06730906	.07068249	.07413683	.08
24	.06558683	.06898703	.07247090	.07
25	.06401196	.06743903	.07095246	.07
26	.06256738	.06602137	.06956432	.07
27	.06123854	.06471949	.06829186	.07
28	.06001298	.06352081	.06712253	.07
29	.05887993	.06241461	.06604551	.07
30	.05783010	.06139154	.06505144	.07
31	.05685535	.06044345	.06413212	.07
32	.05594859	.05956320	.06328042	.07
33	.05510357	.05874453	.06249004	.07
34	.05431477	.05798191	.06175549	.06
35	.05357732	.05727045	.06107171	.06
36	.05288688	.05660578	.06043446	.06
37	.05223956	.05598402	.05983979	.06
38	.05163192	.05540169	.05928423	.06
39	.05106083	.05485567	.05876462	.06
40	.05052349	.05434315	.05827816	.06
41	.05001738	.05386158	.05782229	.06
42	.04954020	.05340868	.05739471	.06
43	.04908989	.05298235	.05699333	.06
44	.04866454	.05258071	.05661625	.06
45	.04826246	.05220202	.05626173	.06
46	.04788205	.05184471	.05592820	.06
47	.04752189	.05150734	.05561421	.064
48	.04718065	.05118858	.05531843	.06
49	.04685712	.05088722	.05503965	.06
50	.04655020	.05060215	.05477674	.06

TABLE VII.

The Annuity which £1 will purchase for any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	1.07000000	1.08000000	1.09000000	1.10000000
2	0.55309179	0.56076923	0.56846890	0.57619048
3	.38105166	.38803351	.39505476	.40211480
4	.29522812	.30192080	.30866866	.31547080
5	.24389069	.25045645	.25769246	.26379748
6	.20979580	.21631539	.22291978	.22960738
7	.18555322	.19207240	.19869052	.20540550
8	.16746776	.17401476	.18067438	.18744402
9	.15348647	.16007971	.16679880	.17364054
10	.14237750	.14902949	.15582009	.16274540
11	.13335690	.14007634	.14694666	.15396314
12	.12590199	.13269502	.13965066	.14676332
13	.11965085	.12652181	.13356656	.14077852
14	.11434494	.12129685	.12843317	.13574622
15	.10979462	.11682954	.12405888	.13147378
16	.10585765	.11297687	.12029991	.12781662
17	.10242519	.10962943	.11704625	.12466413
18	.09941260	.10670210	.11421229	.12193022
19	.09675302	.10412763	.11173041	.11954687
20	.09439293	.10185221	.10954648	.11745962
21	.09228900	.09983225	.10761663	.11562439
22	.09040577	.09803207	.10590499	.11400506
23	.08871393	.09642217	.10438188	.11257181
24	.08718902	.09497796	.10302256	.11129978
25	.08581052	.09367878	.10180625	.11016807
26	.08456103	.09250713	.10071536	.10915904
27	.08342573	.09144810	.09973491	.10825764
28	.08239193	.09048890	.09885205	.10745101
29	.08144865	.08961854	.09805572	.10672807
30	.08058640	.08882743	.09732635	.10607925
31	.07979691	.08810728	.09668560	.10549621
32	.07907292	.08745081	.09609619	.10497172
33	.07840807	.08685163	.09556173	.10449941
34	.07779674	.08630411	.09507660	.10407371
35	.07723396	.08580326	.09463584	.10368971
36	.07671531	.08534467	.09423505	.10334306
37	.07623685	.08492440	.09387033	.10302994
38	.07579505	.08453894	.09353820	.10274692
39	.07538676	.08418513	.09323555	.10249098
40	.07500914	.08386016	.09295961	.10225941
41	.07465962	.08356149	.09270789	.10204980
42	.07433591	.08328684	.09247814	.10185999
43	.07403590	.08303414	.09226837	.10168805
44	.07375769	.08280152	.09207675	.10153224
45	.07349957	.08258728	.09190165	.10139100
46	.07325996	.08238991	.09174160	.10126295
47	.07303744	.08220799	.09159525	.10114682
48	.07283070	.08204027	.09146139	.10104148
49	.07263853	.08188557	.09133893	.10094590
50	.07245985	.08174286	.09122687	.10085917

The Annuity which £1 will purchase for any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ p
51	.03145856	.03490870	.03853382	.0
52	.03110909	.03457446	.03821718	.0
53	.03077392	.03425449	.03791471	.0
54	.03045226	.03394799	.03762558	.0
55	.03014337	.03365419	.03734907	.0
56	.02984657	.03337243	.03708447	.0
57	.02956120	.03310204	.03683114	.0
58	.02928667	.03284244	.03658848	.0
59	.02902243	.03259307	.03635593	.0
60	.02876797	.03235340	.03613296	.0
61	.02852278	.03212294	.03591908	.0
62	.02828643	.03190126	.03571385	.0
63	.02805848	.03168790	.03551682	.0
64	.02783855	.03148249	.03532760	.0
65	.02762624	.03128463	.03514581	.0
66	.02742122	.03109398	.03497110	.0
67	.02722316	.03091021	.03480313	.0
68	.02703173	.03073300	.03464159	.0
69	.02684665	.03056206	.03448618	.0
70	.02666765	.03039712	.03433663	.0
71	.02649446	.03023790	.03419266	.0
72	.02632683	.03008417	.03405404	.0
73	.02616454	.02993568	.03392053	.0
74	.02600736	.02979222	.03379191	.0
75	.02585508	.02965358	.03366796	.0
76	.02570751	.02951956	.03354849	.0
77	.02556447	.02938997	.03343331	.0
78	.02542576	.02926463	.03332224	.0
79	.02529123	.02914338	.03321510	.0
80	.02516071	.02902605	.03311175	.0
81	.02503405	.02891248	.03301201	.0
82	.02491110	.02880254	.03291576	.0
83	.02479173	.02869608	.03282284	.0
84	.02467581	.02859298	.03273313	.0
85	.02456321	.02849310	.03264650	.0
86	.02445381	.02839633	.03256284	.0
87	.02434750	.02830255	.03248202	.0
88	.02424416	.02821165	.03240393	.0
89	.02414370	.02812353	.03232848	.0
90	.02404602	.02803809	.03225556	.0
91	.02395101	.02795523	.03218508	.0
92	.02385859	.02787486	.03211695	.0
93	.02376868	.02779690	.03205107	.0
94	.02368118	.02772126	.03198737	.0
95	.02359602	.02764786	.03192577	.0
96	.02351313	.02757662	.03186619	.0
97	.02343242	.02750747	.03180856	.0
98	.02335383	.02744034	.03175281	.0
99	.02327730	.02737517	.03169886	.0
100	.02320274	.02731188	.03164667	.0
Perp.	.02000000	.02500000	.03000000	.03

The Annuity which £1 will purchase for any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	.04625885	.05033232	.05452867	.06323880
52	.04598212	.05007679	.05429449	.06304617
53	.04571915	.04983469	.05407334	.06286551
54	.04546910	.04960519	.05386438	.06269602
55	.04523124	.04938754	.05366686	.06253696
56	.04500487	.04918105	.05348010	.06238765
57	.04478932	.04898506	.05330343	.06224744
58	.04458401	.04879897	.05313626	.06211573
59	.04438836	.04862221	.05297802	.06199200
60	.04420185	.04845426	.05282818	.06187572
61	.04402398	.04829462	.05268627	.06176642
62	.04385430	.04814284	.05255183	.06166366
63	.04369237	.04799848	.05242442	.06156703
64	.04353780	.04786115	.05230365	.06147615
65	.04339019	.04773047	.05218915	.06139066
66	.04324921	.04760608	.05208057	.06131022
67	.04311451	.04748765	.05197757	.06123454
68	.04298578	.04737487	.05187986	.06116330
69	.04286272	.04726745	.05178715	.06109625
70	.04274506	.04716511	.05169915	.06103313
71	.04263253	.04706760	.05161563	.06097370
72	.04252489	.04697465	.05153633	.06091774
73	.04242190	.04688605	.05146103	.06086505
74	.04232334	.04680159	.05138953	.06081542
75	.04222900	.04672104	.05132161	.06076867
76	.04213868	.04664422	.05125709	.06072463
77	.04205221	.04657094	.05119580	.06068315
78	.04196939	.04650104	.05113757	.06064407
79	.04189007	.04643434	.05108222	.06060724
80	.04181408	.04637069	.05102963	.06057254
81	.04174127	.04630995	.05097963	.06053984
82	.04167150	.04625197	.05093211	.06050903
83	.04160463	.04619662	.05088694	.06047998
84	.04154054	.04614379	.05084399	.06045261
85	.04147909	.04609334	.05080316	.06042681
86	.04142018	.04604516	.05076433	.06040249
87	.04136370	.04599915	.05072740	.06037956
88	.04130953	.04595522	.05069228	.06035795
89	.04125758	.04591325	.05065888	.06033757
90	.04120775	.04587316	.05062711	.06031836
91	.04115995	.04583486	.05059689	.06030025
92	.04111410	.04579827	.05056815	.06028318
93	.04107010	.04576331	.05054080	.06026708
94	.04102789	.04572991	.05051478	.06025190
95	.04098738	.04569799	.05049003	.06023758
96	.04094850	.04566749	.05046648	.06022408
97	.04091119	.04563834	.05044407	.06021135
98	.04087538	.04561048	.05042274	.06019935
99	.04084100	.04558385	.05040245	.06018803
100	.04080600	.04555839	.05038314	.06017736
Perp.	.04000000	.04500000	.05000000	.06000000

TABLE VII.

The Annuity which £1 will purchase for any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per
51	.07229365	.08161116	.09112430	.1007
52	.07213901	.08148959	.09103041	.1007
53	.07199509	.08137735	.09094443	.1006
54	.07186110	.08127370	.09086570	.1005
55	.07173633	.08117796	.09079359	.1005
56	.07162011	.08108952	.09072754	.1004
57	.07151183	.08100780	.09066702	.1004
58	.07141093	.08093228	.09061157	.1003
59	.07131689	.08086247	.09056076	.1003
60	.07122923	.08079795	.09051419	.1003
61	.07114749	.08073830	.09047151	.1002
62	.07107127	.08068314	.09043240	.1002
63	.07100019	.08063214	.09039654	.1002
64	.07093388	.08058497	.09036366	.1002
65	.07087203	.08054135	.09033352	.1002
66	.07081431	.08050100	.09030589	.1001
67	.07076046	.08046367	.09028056	.1001
68	.07071021	.08042914	.09025732	.1001
69	.07066330	.08039719	.09023602	.1001
70	.07061953	.08036764	.09021649	.1001
71	.07057866	.08034029	.09019857	.1001
72	.07054051	.08031498	.09018214	.1001
73	.07050490	.08029156	.09016708	.1000
74	.07047164	.08026990	.09015326	.1000
75	.07044060	.08024984	.09014058	.1000
76	.07041160	.08023128	.09012896	.1000
77	.07038453	.08021410	.09011821	.1000
78	.07035924	.08019820	.09010852	.1000
79	.07033563	.08018349	.09009955	.1000
80	.07031357	.08016987	.09009132	.1000
81	.07029297	.08015726	.09008377	.1000
82	.07027373	.08014559	.09007685	.1000
83	.07025576	.08013479	.09007050	.1000
84	.07023897	.08012479	.09006467	.1000
85	.07022329	.08011553	.09005933	.1000
86	.07020863	.08010696	.09005443	.1000
87	.07019495	.08009903	.09004993	.1000
88	.07018216	.08009168	.09004581	.1000
89	.07017021	.08008489	.09004202	.1000
90	.07015905	.08007859	.09003855	.1000
91	.07014863	.08007277	.09003537	.1000
92	.07013888	.08006737	.09003245	.1000
93	.07012978	.08006238	.09002977	.1000
94	.07012128	.08005775	.09002731	.1000
95	.07011333	.08005347	.09002505	.1000
96	.07010590	.08004951	.09002298	.1000
97	.07009897	.08004584	.09002109	.1000
98	.07009248	.08004244	.09001934	.1000
99	.07008643	.08003930	.09001775	.1000
100	.07008076	.08003638	.09001628	.1000
Perp.	.07000000	.08000000	.09000000	.1000

TABLE VIII.

Logarithm of the Present Value of £1, due at the end of any number of Years.

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ per cent.
1	$\bar{1}$.9913998	$\bar{1}$.9892761	$\bar{1}$.9871628	$\bar{1}$.9850596
2	.9827997	.9785523	.9743256	.9701193
3	.9741995	.9678284	.9614884	.9551789
4	.9655993	.9571045	.9486512	.9402386
5	.9569991	.9463806	.9358139	.9252983
6	.9483990	.9356568	.9229767	.9103579
7	.9397988	.9249329	.9101395	.8954176
8	.9311986	.9142090	.8973023	.8804772
9	.9225985	.9034852	.8844650	.8655369
10	.9139983	.8927613	.8716278	.8505965
11	.9053981	.8820374	.8587906	.8356562
12	.8967979	.8713136	.8459534	.8207158
13	.8881978	.8605897	.8331161	.8057755
14	.8795976	.8498658	.8202789	.7908351
15	.8709974	.8391420	.8074417	.7758948
16	.8623973	.8284181	.7946045	.7609544
17	.8537971	.8176942	.7817672	.7460141
18	.8451969	.8069704	.7689300	.7310737
19	.8365968	.7962465	.7560928	.7161334
20	.8279966	.7855227	.7432556	.7011930
21	.8193964	.7747988	.7304183	.6862527
22	.8107962	.7640749	.7175811	.6713123
23	.8021961	.7533511	.7047439	.6563720
24	.7935959	.7426272	.6919067	.6414316
25	.7849957	.7319033	.6790694	.6264913
26	.7763955	.7211795	.6662322	.6115509
27	.7677954	.7104556	.6533950	.5966106
28	.7591952	.6997317	.6405578	.5816702
29	.7505950	.6890079	.6277205	.5667299
30	.7419949	.6782840	.6148833	.5517895
31	.7333947	.6675601	.6020461	.5368492
32	.7247945	.6568363	.5892089	.5219088
33	.7161944	.6461124	.5763716	.5069685
34	.7075942	.6353885	.5635344	.4920281
35	.6989940	.6246647	.5506972	.4770878
36	.6903938	.6139408	.5378600	.4621474
37	.6817937	.6032169	.5250227	.4472071
38	.6731935	.5924931	.5121855	.4322667
39	.6645933	.5817692	.4993483	.4173264
40	.6559932	.5710454	.4865111	.4023860
41	.6473930	.5603215	.4736738	.3874457
42	.6387928	.5495976	.4608366	.3725053
43	.6301927	.5388738	.4479994	.3575650
44	.6215925	.5281499	.4351622	.3426246
45	.6129923	.5174260	.4223249	.3276843
46	.6043921	.5067021	.4094877	.3127439
47	.5957920	.4959783	.3966505	.2978036
48	.5871918	.4852544	.3838133	.2828632
49	.5785916	.4745305	.3709760	.2679229
50	.5699914	.4638067	.3581388	.2529825

TABLE VIII.

Logarithm of the Present Value of £1, due at the end of any number of

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per
1	$\bar{1}$.9829667	$\bar{1}$.9808837	$\bar{1}$.9788107	$\bar{1}$.97
2	.9659333	.9617674	.9576214	.94
3	.9489000	.9426511	.9364321	.92
4	.9318666	.9235348	.9152428	.89
5	.9148333	.9044185	.8940535	.87
6	.8978000	.8853022	.8728642	.84
7	.8807666	.8661859	.8516749	.82
8	.8637333	.8470696	.8304856	.79
9	.8467000	.8279533	.8092963	.77
10	.8296667	.8088371	.7881070	.74
11	.8126333	.7897208	.7669177	.72
12	.7956000	.7706045	.7457284	.69
13	.7785667	.7514882	.7245391	.67
14	.7615333	.7323719	.7033498	.64
15	.7445000	.7132556	.6821605	.62
16	.7274667	.6941393	.6609712	.59
17	.7104333	.6750230	.6397819	.56
18	.6934000	.6559067	.6185926	.54
19	.6763667	.6367904	.5974033	.51
20	.6593333	.6176742	.5762140	.49
21	.6422999	.5985579	.5550247	.46
22	.6252666	.5794416	.5338354	.44
23	.6082332	.5603253	.5126461	.41
24	.5911999	.5412090	.4914568	.39
25	.5741666	.5220927	.4702675	.36
26	.5571333	.5029764	.4490782	.34
27	.5401000	.4838601	.4278889	.31
28	.5230667	.4647438	.4066996	.29
29	.5060333	.4456275	.3855103	.26
30	.4890000	.4265113	.3643210	.24
31	.4719667	.4073950	.3431317	.21
32	.4549333	.3882787	.3219424	.19
33	.4379000	.3691624	.3007531	.16
34	.4208667	.3500461	.2795638	.13
35	.4038333	.3309298	.2583745	.11
36	.3868000	.3118135	.2371852	.08
37	.3697667	.2926972	.2159959	.06
38	.3527333	.2735809	.1948066	.03
39	.3357000	.2544646	.1736173	.01
40	.3186667	.2353484	.1524280	$\bar{2}$.98
41	.3016333	.2162321	.1312387	.96
42	.2846000	.1971158	.1100495	.93
43	.2675667	.1779995	.0888602	.91
44	.2505333	.1588832	.0676709	.88
45	.2335000	.1397669	.0464816	.86
46	.2164667	.1206506	.0252923	.83
47	.1994333	.1015343	.0041030	.81
48	.1824000	.0824180	$\bar{2}$.9829137	.78
49	.1653667	.0633017	.9617244	.76
50	.1483333	.0441855	.9405352	.73

TABLE VIII.

Logarithm of the Present Value of £1, due at the end of any number of Years.

Years.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
1	$\bar{1}$.9706162	$\bar{1}$.9665762	$\bar{1}$.9625735	$\bar{1}$.9586073
2	.9412324	.9331524	.9251470	.9172146
3	.9118487	.8997287	.8877205	.8758219
4	.8824649	.8663049	.8502940	.8344293
5	.8530811	.8328812	.8128675	.7930366
6	.8236973	.7994574	.7754410	.7516439
7	.7943135	.7660337	.7380145	.7102512
8	.7649298	.7326099	.7005880	.6688585
9	.7355460	.6991862	.6631615	.6274658
10	.7061622	.6657624	.6257350	.5860731
11	.6767784	.6323387	.5883085	.5446805
12	.6473946	.5989149	.5508820	.5032878
13	.6180109	.5654912	.5134555	.4618951
14	.5886271	.5320674	.4760290	.4205024
15	.5592433	.4986437	.4386025	.3791097
16	.5298595	.4652199	.4011760	.3377170
17	.5004757	.4317961	.3637495	.2963244
18	.4710920	.3983724	.3263230	.2549317
19	.4417082	.3649486	.2888965	.2135390
20	.4123244	.3315249	.2514700	.1721463
21	.3829406	.2981011	.2140435	.1307536
22	.3535568	.2646774	.1766170	.0893609
23	.3241731	.2312536	.1391905	.0479682
24	.2947893	.1978299	.1017641	.0065756
25	.2654055	.1644061	.0643376	$\bar{2}$.9651829
26	.2360217	.1309824	.0269111	.9237902
27	.2066379	.0975586	$\bar{2}$.9894846	.8823975
28	.1772542	.0641349	.9520581	.8410048
29	.1478704	.0307111	.9146316	.7996121
30	.1184866	$\bar{2}$.9972874	.8772051	.7582194
31	.0891028	.9638636	.8397786	.7168268
32	.0597190	.9304399	.8023521	.6754341
33	.0303353	.8970161	.7649256	.6340414
34	.0009515	.8635923	.7274991	.5926487
35	$\bar{2}$.9715677	.8301685	.6900726	.5512560
36	.9421839	.7967448	.6526461	.5098633
37	.9128001	.7633210	.6152196	.4684706
38	.8834164	.7298973	.5777931	.4270780
39	.8540326	.6964735	.5403666	.3856853
40	.8246488	.6630498	.5029401	.3442926
41	.7952650	.6296260	.4655136	.3028999
42	.7658812	.5962023	.4280871	.2615072
43	.7364975	.5627785	.3906606	.2201145
44	.7071137	.5293548	.3532341	.1787219
45	.6777299	.4959310	.3158076	.1373292
46	.6483461	.4625073	.2783811	.0959365
47	.6189623	.4290835	.2409546	.0545438
48	.5895786	.3956598	.2035281	.0131511
49	.5601948	.3622360	.1661016	$\bar{3}$.9717584
50	.5308110	.3288122	.1286751	.9303657

TABLE VIII.

Logarithm **of the Present Value of £1, due at the end of any number of**

Years.	2 per cent.	2½ per cent.	3 per cent.	3½ pe
51	$\bar{1}$.5613912	$\bar{1}$.4530828	$\bar{1}$.3453016	$\bar{1}$.23
52	.5527910	.4423590	.3324644	.22
53	.5441909	.4316351	.3196271	.20
54	.5355907	.4209112	.3067899	.19
55	.5269905	.4101874	.2939527	.17
56	.5183904	.3994635	.2811155	.16
57	.5097902	.3887396	.2682782	.14
58	.5011900	.3780158	.2554410	.13
59	.4925898	.3672919	.2426038	.11
60	.4839897	.3565681	.2297666	.10
61	.4753895	.3458442	.2169293	.08
62	.4667893	.3351203	.2040921	.07
63	.4581892	.3243965	.1912549	.05
64	.4495890	.3136726	.1784177	.04
65	.4409888	.3029487	.1655804	.02
66	.4323887	.2922249	.1527432	.01
67	.4237885	.2815010	.1399060	$\bar{2}$.99
68	.4151883	.2707771	.1270688	.98
69	.4065882	.2600533	.1142315	.96
70	.3979880	.2493294	.1013943	.95
71	.3893878	.2386055	.0885571	.93
72	.3807876	.2278817	.0757199	.92
73	.3721874	.2171578	.0628826	.90
74	.3635872	.2064339	.0500454	.89
75	.3549870	.1957101	.0372082	.87
76	.3463869	.1849862	.0243710	.86
77	.3377867	.1742623	.0115337	.84
78	.3291865	.1635385	$\bar{2}$.9986965	.83
79	.3205864	.1528146	.9858593	.81
80	.3119863	.1420908	.9730221	.80
81	.3033861	.1313669	.9601848	.78
82	.2947859	.1206430	.9473476	.77
83	.2861858	.1099192	.9345104	.75
84	.2775856	.0991953	.9216732	.74
85	.2689854	.0884714	.9088359	.73
86	.2603853	.0777476	.8959987	.71
87	.2517851	.0670237	.8831615	.70
88	.2431850	.0562998	.8703243	.68
89	.2345848	.0455760	.8574870	.67
90	.2259846	.0348521	.8446498	.65
91	.2173844	.0241282	.8318126	.64
92	.2087843	.0134044	.8189754	.62
93	.2001841	.0026805	.8061381	.61
94	.1915839	$\bar{2}$.9919567	.7933009	.59
95	.1829838	.9812328	.7804637	.58
96	.1743836	.9705090	.7676265	.56
97	.1657834	.9597851	.7547892	.55
98	.1571832	.9490612	.7419520	.53
99	.1485831	.9383374	.7291148	.52
100	.1399829	.9276135	.7162775	.50

TABLE VIII.

Logarithm of the Present Value of £1, due at the end of any number of Years.

Years.	4 per cent.	4½ per cent.	5 per cent.	6 per cent.
51	$\bar{1}$.1313000	$\bar{1}$.0250692	$\bar{2}$.9193459	$\bar{2}$.7094007
52	.1142667	.0059529	.8981566	.6840949
53	.0972333	$\bar{2}$.9868366	.8769673	.6587890
54	.0802000	.9677203	.8557780	.6334831
55	.0631667	.9486040	.8345887	.6081773
56	.0461333	.9294877	.8133994	.5828714
57	.0291000	.9103714	.7922101	.5575655
58	.0120667	.8912551	.7710208	.5322597
59	$\bar{2}$.9950333	.8721388	.7498315	.5069538
60	.9780000	.8530226	.7286422	.4816479
61	.9609667	.8339063	.7074529	.4563421
62	.9439333	.8147900	.6862636	.4310362
63	.9269000	.7956737	.6650743	.4057303
64	.9098667	.7765574	.6438850	.3804245
65	.8928333	.7574411	.6226957	.3551186
66	.8758000	.7383248	.6015064	.3298127
67	.8587667	.7192085	.5803171	.3045069
68	.8417333	.7000922	.5591278	.2792010
69	.8247000	.6809759	.5379385	.2538951
70	.8076667	.6618596	.5167492	.2285893
71	.7906333	.6427433	.4955599	.2032834
72	.7736000	.6236271	.4743706	.1779775
73	.7565667	.6045108	.4531813	.1526717
74	.7395333	.5853945	.4319920	.1273658
75	.7225000	.5662782	.4108027	.1020599
76	.7054667	.5471619	.3896134	.0767541
77	.6884333	.5280456	.3684241	.0514482
78	.6714000	.5089293	.3472348	.0261423
79	.6543667	.4898130	.3260455	.0008365
80	.6373333	.4706968	.3048562	$\bar{3}$.9755306
81	.6203000	.4515805	.2836669	.9502247
82	.6032667	.4324642	.2624776	.9249189
83	.5862333	.4133479	.2412883	.8996130
84	.5692000	.3942316	.2200990	.8743071
85	.5521667	.3751153	.1989097	.8490013
86	.5351333	.3559990	.1777204	.8236954
87	.5181000	.3368827	.1565311	.7983895
88	.5010667	.3177664	.1353418	.7730837
89	.4840333	.2986501	.1141525	.7477778
90	.4670000	.2795339	.0929632	.7224719
91	.4499667	.2604176	.0717739	.6971661
92	.4329333	.2413013	.0505846	.6718602
93	.4159000	.2221850	.0293953	.6465543
94	.3988667	.2030687	.0082060	.6212485
95	.3818333	.1839524	$\bar{3}$.9870167	.5959426
96	.3648000	.1648361	.9658274	.5706367
97	.3477667	.1457198	.9446381	.5453309
98	.3307333	.1266035	.9234488	.5200250
99	.3137000	.1074872	.9022595	.4947191
100	.2965667	.0883710	.8810702	.4694133

TABLE VIII.

Logarithm **of the Present Value of £1, due at the end of any number of**

Years.	7 per cent.	8 per cent.	9 per cent.	10 per
51	$\bar{2}$.5014272	$\bar{2}$.2953884	$\bar{2}$.0912486	$\bar{3}$.88
52	.4720434	.2619646	.0538221	.84
53	.4426597	.2285409	.0163956	.80
54	.4132759	.1951171	$\bar{3}$.9789691	.76
55	.3838921	.1616934	.9415426	.72
56	.3545083	.1282696	.9041161	.68
57	.3251245	.0948459	.8666896	.64
58	.2957408	.0614221	.8292631	.59
59	.2663570	.0279984	.7918366	.55
60	.2369732	$\bar{3}$.9945746	.7544101	.51
61	.2075894	.9611509	.7169836	.47
62	.1782057	.9277271	.6795571	.43
63	.1488219	.8943033	.6421306	.39
64	.1194381	.8608796	.6047041	.35
65	.0900543	.8274558	.5672776	.30
66	.0606705	.7940321	.5298511	.26
67	.0312868	.7606083	.4924246	.22
68	.0019030	.7271846	.4549981	.18
69	$\bar{3}$.9725192	.6937608	.4175716	.14
70	.9431354	.6603371	.3801451	.10
71	.9137516	.6269133	.3427186	.06
72	.8843679	.5934896	.3052922	.01
73	.8549841	.5600658	.2678657	$\bar{4}$.97
74	.8256003	.5266421	.2304392	.93
75	.7962165	.4932183	.1930127	.89
76	.7668327	.4597946	.1555862	.85
77	.7374490	.4263708	.1181597	.81
78	.7080652	.3929470	.0807332	.77
79	.6786814	.3595232	.0433067	.72
80	.6492976	.3260995	.0058802	.68
81	.6199138	.2926757	$\bar{4}$.9684537	.64
82	.5905301	.2592520	.9310272	.60
83	.5611463	.2258282	.8936007	.56
84	.5317625	.1924045	.8561742	.52
85	.5023787	.1589807	.8187477	.48
86	.4729949	.1255570	.7813212	.44
87	.4436112	.0921332	.7438947	.39
88	.4142274	.0587095	.7064682	.35
89	.3848436	.0252857	.6690417	.31
90	.3554598	$\bar{4}$.9918620	.6316152	.27
91	.3260761	.9583382	.5941887	.23
92	.2966923	.9249144	.5567622	.19
93	.2673085	.8914907	.5193357	.15
94	.2379247	.8580669	.4819092	.10
95	.2085409	.8246432	.4444827	.06
96	.1791572	.7912194	.4070562	.02
97	.1497734	.7577957	.3696297	$\bar{5}$.98
98	.1203896	.7243719	.3322032	.94
99	.0910058	.6909482	.2947767	.90
100	.0616221	.6575244	.2573502	.86

PART II.

LIFE ANNUITIES.

102. A society consists of 100 persons, 20 of whom are to go out by lot every year; each member, at the commencement, is to contribute an equal sum to form a fund for the payment of £1 at the end of every year to each who remains; what is the amount to be contributed by each when the interest of money is 4 per cent?

At the end of the first year there will be 80 members, each of whom is to receive £1; at the end of the second year the number left will be 60, at the end of the third year 40, at the end of the fourth 20, and at the end of the fifth there will be none left; by Art. 33,

$80 \times 1.04^{-1} = 80 \times .961538 = 76.92304$ } to provide for the payments at the end of the 1st year,
$60 \times 1.04^{-2} = 60 \times .924556 = 55.47336$ ditto 2nd ditto,
$40 \times 1.04^{-3} = 40 \times .888996 = 35.55984$ ditto 3rd ditto,
$20 \times 1.04^{-4} = 20 \times .854804 = 17.09608$ ditto 4th ditto,

their sum $= 185.05232 =$ the total amount to be contributed to form the requisite fund, which, divided by 100 (the number of contributors), gives $1.850 =$ £1 17 0, the sum to be contributed by each.

103. In the Carlisle Rate of Mortality (Table 1), of 10,000 persons born, 8461 survive one year, 7779 survive 2 years, 7274 survive 3 years, and so on till they all become extinct. If, when the interest of money is 3 per cent, it were required to provide at the time of birth £1 for each of the 10,000 who survive one year, it appears that £8461 would be paid amongst them at the end of a year, the present value of which, 8461×1.03^{-1}, is the sum which will provide for the payment of £1 to each survivor, which, divided by 10,000, gives $\frac{8461 \times 1.03^{-1}}{10000}$ the sum to be contributed on behalf of each; if £1 is to be provided at the time of birth for each child who survives 2 years, 7779×1.03^{-2} is the sum to be set apart for the payment of the 7779 who survive that period, and $\frac{7779 \times 1.03^{-2}}{10000}$ is the sum to be contributed on behalf of each.

At the age of 14, the number who survive is 6335, of whom 60 attain the age of 21: the sum which must be paid at the age of 14, provide £1 to each of these individuals on attaining the age of 21, 6047×1.03^{-7}, and the sum to be contributed on behalf of each $\frac{6047 \times 1.03^{-7}}{6335}$.

This sum is less than 1.03^{-7}, which any individual would h paid to secure an *absolute* right to £1 at the end of 7 years: difference arises from there being some chance of the individual surviving the term which would entitle him to the sum; and it is equitable that he should pay that fraction only of the present value wh expresses the chance of his receiving it. In the present case of 63 persons living at the age of 14, only 6047 reach the age of 21, and, as may suppose every individual has the same chance of being one of th survivors, and 6047 is the number of chances divided amongst 63 individuals, the chance of each individual is $\frac{6047}{6335}$. (Probabili Art. 4.)

104. The difference between 6335 and 6047 is 288, the number w die between the ages of 14 and 21 years, out of 6335 persons; and, each has the same chance of being one of the 288, the chance at age of 14 of an individual dying before he attains the age of 21 $\frac{288}{6335}$.

If we make r^n = present value of £1 due at the end of n years,

$p_{m,n}$ = probability of a life aged m living n years,

$p_{(m, m_1, m_2, \&c.), n}$ = { do. of the joint existence of any nu ber of lives aged respectively m, n m_2, &c., years, continuing n year

$p^{\overline{\qquad v}}_{(m, m_1, m_2, \&c.), n}$ = { do. of the joint existence of the la v survivors,

l_m = number living at the age m according to the Tables, the probability of a life aged m living n years is

$$p_{m,n} = \frac{l_{m+n}}{l_m}.$$

Rule. The probability of an individual surviving any number years is found by dividing the number living in the Tables at the a vanced age, by the number living at the present age.

Example. What is the probability of a male aged 36 completing th age of 53, according to the rate of mortality at Chester? (Probabilit Table 2.)

$$n = 53 - 36 = 17$$

$$p_{m,n} = p_{36,17} = \frac{l_{53}}{l_{36}} = \frac{3396}{4787} = .7094.$$

105. The present value of a sum (s) to be received at the end of any number of years (n), in the event of an individual aged m surviving that term, is found by multiplying the present value of that sum receivable at the end of the given term by the probability of the individual surviving that term.

$$sr^n . p_{m,n} = sr^n . \frac{l_{m+n}}{l_m}.$$

Example. A father wishes to provide for his daughter, aged 14, the sum of £850 on her attaining the age of 21: what sum should he pa to secure it, supposing the interest of money 3 per cent, and the rate of mortality the same as at Carlisle? (Table 1.)

$r^n = 1.03^{-7} \quad l_m = l_{14} = 6335 \quad l_{21} = 6047 \quad s = 850$

Table 4, Part I.;

$1.03^{-7} = .81309151$

$058 = s$ inverted

650473208

40654576

691.127784

$7406 = l_{21}$ inverted

4146766704

27645111

4837894

$l_{14} = 6335)4179249.709(659.708$

38010

37824

31675

61499

57015

44847

44345

50209

by logarithms,

$\log 1.03^{-7} = \bar{1}.9101395$

$\log s = 2.9294189$

$\log l_{21} = 3.7815400$

$\log l_{14} = \bar{4}.1982534$

2.8193518 £659.708

= £659 14 2

106. If the money be receivable in the event of *two* persons *both* surviving the term, the present value of the sum due at the expiration of the term must be multiplied by the two fractions which express the probability of each surviving the term separately. (Probability, Art. 15.)

In the preceding example, if the receipt of the money at the end o the seven years depended not only on a life aged 14 surviving that term, but also on another aged 16 surviving the same period, the value would evidently be diminished; and the result obtained on the supposition of the receipt of the money depending on the happening of the first event only, must be multiplied by the fraction which expresses the chance of the happening of the other event.

$$sr^7\, p_{(14,16),7} = \frac{l_{21}}{l_{14}} \cdot \frac{l_{23}}{l_{16}} \cdot sr^7 = \frac{6047}{6335} \times \frac{5963}{6261} \times 850 \times .81309151 = 628.308$$

$$\begin{aligned} \text{(by logarithms) } \log \frac{6047}{6335} \times 850 \times .81309151 &= 2.8193518 \text{ by last example} \\ \log l_{23} &= 3.7754648 \\ -\log l_{16} &= \bar{4}.2033563 \\ \hline &\ 2.7981729\ \pounds 628.308 = \\ &\ \pounds 628\ \ 6\ \ 2 \end{aligned}$$

107. Whatever may be the number of lives, if the receipt of the money depend on *all* of them surviving a given period, the present value of the sum must be multiplied by the continued product of the fractions which express the chance of each surviving separately.

$$\cdot\ sr^n\, p_{(m,\, m_1,\, m_2,\, \&c.),\, n} = sr^n \cdot \frac{l_{m+n}}{l_m} \cdot \frac{l_{m_1+n}}{l_{m_1}} \cdot \frac{l_{m_2+n}}{l_{m_2}}, \ \&c.$$

108. As certainty is expressed by unity (Prob. Art. 6), the probability of a life dying before the end of a given time is found by subtracting from unity the probability of the life surviving that time, it being evident that one or other of the events must happen.

The same rule is obtained by dividing the number of deaths that take place in the given time by the number living at the present age.

$$\frac{l_m - l_{m+n}}{l_m} = 1 - \frac{l_{m+n}}{l_m} = 1 - p_{m,n}$$

109. If there be two or more lives, the probability of their joint existence failing in n years is

$$1 - p_{(m,\, m_1,\, m_2,\, \&c.),\, n} = 1 - \frac{l_{m+n}}{l_m} \cdot \frac{l_{m_1+n}}{l_{m_1}} \cdot \frac{l_{m_2+n}}{l_{m_2}}, \ \&c.$$

110. The probability of any number of lives *all* dying in a given term is obtained by finding the product of the chances of each separate individual dying in that term.

If we call the respective ages of the lives m, m_1, m_2, &c., then

$$(1-p_{m,n})\,(1-p_{m_1,n})\,(1-p_{m_2,n}),\&c. = \frac{(l_m - l_{m+n})}{l_m} \cdot \frac{(l_{m_1} - l_{m_1+n})}{l_{m_1}} \cdot \frac{(l_{m_2} - l_{m_2+n})}{l_{m_2}}$$

&c. (Art. 107), is the chance that the lives aged m, m_1, m_2, &c., will *all* die in n years.

111. Since it is certain that the lives will either all fail, or that one or more will survive the term, the probability that at the end of the term they will not all have died, that is, that one of them at least will be in existence, is

$$1 - (1 - p_{m,n})\,(1 - p_{m_1,n})\,(1 - p_{m_2,n})\ \&c.;$$

when there are *two lives*, aged m and m_1 years, the expression becomes

$$p^{\;1}_{\overline{(m,m_1)},n} = 1-(1-p_{m,n})(1-p_{m_1,n}) = p_{m,n}+p_{m_1,n}-p_{(m,m_1),n}$$

when there are *three* lives, aged m, m_1, m_2, it becomes

$$p^{\;1}_{\overline{(m,m_1,m_2)},n} = 1-(1-p_{m,n})(1-p_{m_1,n})(1-p_{m_2,n}) =$$

$$p_{m,n}+p_{m_1,n}+p_{m_2,n}-p_{(m,m_1),n}-p_{(m,m_2),n}-p_{(m_1,m_2),n}+p_{(m,m_1,m_2),n}$$

PRESENT VALUES OF LIFE ANNUITIES.

112. To find the present value of an annuity payable at the end of every year during the existence of a single life.

Let the annuity be £1[*], and m the age of the individual during whose life it is to continue: then the present value of the first year's payment of the annuity is found by multiplying the present value of £1 due at the end of one year by the chance of the life living one year (Art. 103), the present value of the second payment by multiplying the present value of £1 due at the end of two years by the chance of the life living two years, and finding in the same manner the present value of each year's payment to the extremity of life; the sum is the present value of the annuity.

Let a_m	denote the present value of an annuity of £1 during a life aged m years.
$a_{m,m_1,m_2,\text{\&c.}}$	the present value of an annuity of £1 during the *joint existence* of the lives aged m, m_1, m_2 &c., years.
$a^{\;v}_{\overline{(m,m_1,m_2,\text{\&c.})}}$	present value of an annuity of £1 until the failure of the joint existence of the last v survivors of lives aged respectively m, m_1, m_2, &c., years.
$a_{(m)_{\overline{n\rceil}}}$	present value of an annuity of £1 for the next n years, depending on the existence of a life aged m years.
$a_{(m,m_1,m_2,\text{\&c.}),\overline{n\rceil}}$	present value of an annuity of £1 for n years, depending on the joint existence of the lives aged m, m_1, m_2, &c., years.

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[*] The formulæ in all cases are given on the supposition that the annuity is £1; from which the present value of an annuity of any other amount may be found by multiplying the present value of £1 per annum by the yearly income of which the value is required.

$a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}_{\;n\rceil}}$	present value of an annuity of £1 for the next n years, depending on the joint existence of the last v survivors of the lives aged $m, m_1, m_2,$ &c., years.
$a_{(m)\rceil n}$	present value of an annuity of £1, to be entered upon at the expiration of n years, and then to continue during the existence of a life now aged m years.
$a_{(m, m_1, m_2, \&c.)\rceil n}$	present value of an annuity of £1, to be entered upon at the expiration of n years, and then to continue during the joint existence of the lives now aged $m, m_1, m_2,$ &c., years.
$a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}\rceil n}$	present value of an annuity of £1, to be entered upon at the expiration of n years, and then to continue until the failure of the joint existence of the last v survivors of the lives aged $m, m_1, m_2,$ &c., years.

if we call z the difference between the age m and the oldest age completed by any life according to the Table,

$$a_m = p_{m,1}.r + p_{m,2}.r^2 + p_{m,3}.r^3 + p_{m,4}.r^4 + \ldots\ldots + p_{m,z}\,r^z$$

writing for $p_{m,1}, p_{m,2}$, &c., their values $\frac{l_{m+1}}{l_m}, \frac{l_{m+2}}{l_m}$, &c. (Art. 104.)

$$a_m = \frac{l_{m+1}r + l_{m+2}\,r^2 + l_{m+3}\,r^3 + l_{m+4}\,r^4 + \ldots . + l_{m+z}\,r^z}{l_m} \quad (1)$$

If the numerator and denominator of this fraction be multiplied by r^m (which will not affect the value of the expression), the formula becomes

$$a_m = \frac{l_{m+1}\,r^{m+1} + l_{m+2}\,r^{m+2} + l_{m+3}\,r^{m+3} + l_{m+4}\,r^{m+4} + \ldots . l_{m+z}\,r^{m+z}}{l_m .\, r^m} \quad (2)$$

Rule. Multiply the number of living at each year of age by the present value of £1 due at the end of the same number of years as the age; then the present value of the annuity at any age is found by dividing the sum of the products at all the ages above that on which the annuity depends by the product at that age.

113. The advantage of the last form of the fraction over the other may be seen by taking as examples the separate ages of 96 and 95 in the Carlisle Table of Mortality.

$$a_{96} = \frac{l_{97}\,r^{97} + l_{98}\,r^{98} + l_{99}\,r^{99} + l_{100}\,r^{100} + \ldots\ldots + l_{104}\,r^{104}}{l_{96}\,r^{96}}$$

$$a_{95} = \frac{l_{96}\,r^{96} + l_{97}\,r^{97} + l_{98}\,r^{98} + l_{99}\,r^{99} + l_{100}\,r^{100} + \ldots . + l_{104}\,r^{104}}{l_{95}\,r^{95}}$$

On comparing the expressions for these two values, we observe that in finding the value at the age of 95 every term is introduced which was employed in finding the value at the age of 96; so that it costs very little more trouble to find the value at both the ages than to find the value at one of them only; but, had the first expression for a_{95} been used, the operation employed in finding the value at the age of 96 would not have afforded direct assistance in finding the value at the age of 95; the method which has been adopted has also other important advantages, the preparatory operations being of great use in abridging the labour of finding the values of Temporary and Deferred Annuities and Assurances.

The following example, in numbers, of the values of annuities at 4 per cent, by the Carlisle Rate of Mortality (Table 1), will show the process of forming a table of the values of annuities on single lives.

$$\begin{array}{rrll}
l_{104}r^{104} = & 1\times.01692512 = & .01692512 & \\
l_{103}r^{103} = & 3\times.01760212 = & \underline{.05280636} & a_{103} = \frac{.01692512}{.05280636} = .32051 \\
N_{103} = & & .06973148 & \\
l_{102}r^{102} = & 5\times.01830625 = & \underline{.09153125} & a_{102} = \frac{.06973148}{.09153125} = .76183 \\
N_{101} = & & .16126273 & \\
l_{101}r^{101} = & 7\times.01903850 = & \underline{.13326950} & a_{101} = \frac{.16126273}{.13326950} = 1.21005 \\
N_{100} = & & .29453223 & \\
l_{100}r^{100} = & 9\times.01980004 = & \underline{.17820036} & a_{100} = \frac{.29453223}{.17820036} = 1.65282 \\
N_{99} = & & .47273259 & \\
l_{99}r^{99} = & 11\times.02059204 = & \underline{.2265124} & a_{99} = \frac{.47273259}{.2265124} = 2.08700 \\
N_{98} = & & .6992450 & \\
l_{98}r^{98} = & 14\times.02141572 = & \underline{.2998201} & a_{98} = \frac{.6992450}{.2998201} = 2.33222 \\
N_{97} = & & .9990651 & \\
l_{97}r^{97} = & 18\times.02227235 = & \underline{.4009023} & a_{97} = \frac{.9990651}{.4009023} = 2.49204 \\
N_{96} = & & 1.3999674 & \\
l_{96}r^{96} = & 23\times.02316325 = & \underline{.5327548} & a_{96} = \frac{1.3999674}{.5327548} = 2.62779 \\
N_{95} = & & 1.9327222 & \\
l_{95}r^{95} = & 30\times.02408978 = & .7226934 & a_{95} = \frac{1.9327222}{.7226934} = 2.67433
\end{array}$$

114. In forming a table of annuities great care must be taken that the products of the present value of £1 and the number of living at each age are accurately obtained, since an error at any one age will evidently affect the results at all the younger ages. A good method of guarding against inaccuracy is to have the products computed, either by two different methods or by two different individuals, and the results carefully compared: this being done, we find the sum of all the products above each age, and check them by finding the sums for every five or ten years, or any other convenient interval; if they agree we may assume the intermediate sums to be correct*, and then proceed to the divisions.

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* A balance of errors may possibly exist.

To check the additions in the last example

$l_{104}\, r^{104} = .01692512$
$l_{103}\, r^{103} = .05280636$
$l_{102}\, r^{102} = .09153125$
$l_{101}\, r^{101} = .13326950$
$l_{100}\, r^{100} = .17820036$
$.47273259$ = sum of the products above the ag
$l_{99}\, r^{99} = .2265124$ agreeing with the result obtained t
$l_{98}\, r^{98} = .2998201$
$l_{97}\, r^{97} = .4009023$
$l_{96}\, r^{96} = .5327548$
1.9327222 = sum of products above the age of 95, ı

115. Mr. Griffith Davies was the first who computed tabl values of annuities on the above plan, some of which he has in a tract, in which are given formulæ for computing variou Annuities and Assurances on Single Lives.

116. Tables have been inserted at the end to show the appl some of these formulæ, the notation varying but slightly from vies's. The number in column D opposite any age is the produc by multiplying the number living opposite that age in Table present value of £1 due the same number of years as the age the age of 30 the number living by Table 1, is 5642, and the pre of £1 due at the end of 30 years is by Table 4, Part I. = .3 The product of these two numbers = 1739.53393, which is th in Table 13, under column D, opposite the age of 30. Having this manner the numbers in column D at all ages from birth to ı mity of life, those in column N are found by beginning at t age, and taking the successive sums of the numbers in column Art. 113, the number in column N at any age being the su numbers in column D at all the ages *above* the given one. C is formed by multiplying the decrements opposite each age ir by the present value of £1 due the same numbers of years a increased by unity, and taking the successive sums from the ı of life, as in the formation of column N from the numbers in cc

Column S is the sum of the number at any given age, and a above in column N; and column R is the sum of all the nu column M at any given age and above.

D_m, N_m, M_m, S_m, R_m, represent the numbers opposite a
in the respective columns so m
D_{m-1}, N_{m-1}, M_{m-1}, S_{m-1}, R_{m-1}, opposite an age one yea
than *m*.
D_{m+t}, N_{m+t}, M_{m+t}, S_{m+t} R_{m+t}, . . *t* years olde
$D_{(m-1)+t}$, $N_{(m-1)+t}$, $M_{(m-1)+t}$, $S_{(m-1)+t}$, $R_{(m-1)+t}$, *t* years old
life one year younger than *m*.

117. Mr. Davies's formula is an improved modification of that of Barrett, which first pointed out the principle of making the preparatory labour directly available for finding the values of temporary and deferred annuities, &c. Messrs. Baily and Babbage, at the end of their respective works, treat on the application of Barrett's formula, which is thus obtained :

In the expression (1) for a_m in Art. 112, writing for r its value $(1+i)^{-1}$, and call x the oldest age in the table, we have

$$a_m = \frac{l_{m+1}(1+i)^{-1}+l_{m+2}(1+i)^{-2}+l_{m+3}(1+i)^{-3}+\ldots\ldots+(1+i)^{-x}}{l_m}$$

which, by multiplying numerator and denominator by $(1+i)^{x-m}$, becomes

$$\frac{l_{m+1}.(1+i)^{x-(m+1)}+l_{m+2}(1+i)^{x-(m+2)}+l_{m+3}(1+i)^{-(m+3)}+\ldots\ldots+l_{x-1}(1+i)+l_x}{l_m(1+i)^{x-m}}$$

which expresses the following rule :

Let the number of living at each year of age be multiplied by the amount of £1 at the end of as many years as are equal to the difference between the age and the oldest in the table, then the sum of all the products above any given age divided by the product at the given age will give the value of an annuity on a life of that age. The following illustration is from the Carlisle 3 per cent ; the number in column A opposite to any age being the product at that age, and the number in column B the sum of the numbers in column A at that age and all ages above : the value of £1 per annum at any age is therefore the number in column B, at an age one year older than the given one divided by the number in column A at the given age.

$$\begin{array}{lr}
l_{104} \times 1.04^0 = 1 \times 1 \quad = & 1.000000 \\
l_{103} \times 1.04^1 = 3 \times 1.04 \quad = & \underline{3.12} \\
 & 4.120000 \\
l_{102} \times 1.04^2 = 5 \times 1.0816 & \underline{5.408000} \\
 & 9.528000 \\
l_{101} \times 1.04^3 = 7 \times 1.124864 = & \underline{7.874048} \\
 & 17.402048 \\
l_{100} \times 1.04^4 = 9 \times 1.169859 = & \underline{10.528731} \\
 & 27.930779
\end{array}$$

Age	A	B
104	1.000000	1.000000
103	3.120000	4.120000
102	5.408000	9.528000
101	7.874048	17.402048
100	10.528731	27.930779

COMMON METHOD OF FORMING TABLES OF ANNUITIES.

118. The following mode of computing tables of annuities was, un very recently, adopted by most authors on this subject:—

Art. 112. $$a_m = \frac{l_{m+1} r + l_{m+2} r^2 + l_{m+3} r^3 + l_{m+4} r^4 + \&c.}{l_m}$$

and $$a_{m-1} = \frac{l_m r + l_{m+1} r^2 + l_{m+2} r^3 + l_{m+3} r^4 + \&c.}{l_{m-1}} =$$

$$\frac{l_m + l_{m+1} r + l_{m+2} r^2 + l_{m+3} r^3 + \&c.}{l_m} \times \frac{l_m r}{l_{m-1}} =$$

$$\left(1 + \frac{l_{m+1} r + l_{m+2} r^2 + l_{m+3} r^3 + l_{m+4} r^4 + \&c.}{l_m}\right) \frac{l_m r}{l_{m-1}} =$$

$(1 + a_m) p_{m-1,1} r$, from which expression it appears th the value of an annuity at any age may be found, when the value given at the age one year older.

If we commence at the oldest age in the table, at which the value the annuity is 0, and proceed through all the other ages to the time birth, a table will be formed of the values of annuities; the rule express in words is to " increase the value of an annuity at any age by unit multiply the sum by the chance of a life one year younger completi that age, and by the present value of £1 due at the end of one yea the result is the value of an annuity on a life one year younger than t given age."

119. As an example, let us find the values at 3 per cent by the ra of mortality among males at Chester, as given in Table 2 of Probabili

$$a_{99} = \frac{l_{100}}{l_{99}} r (1 + a_{100}) = \frac{23}{30} \times .970874 \times (1 + 0.) = .7443$$

$$a_{98} = \frac{l_{99}}{l_{98}} r (1 + a_{99}) = \frac{30}{37} \times .970874 \times 1.7443 = 1.3731$$

$$a_{97} = \frac{l_{98}}{l_{97}} r (1 + a_{98}) = \frac{37}{44} \times .970874 \times 2.3731 = 1.9375$$

which results are found to agree with the values given in Table 3 (P bability), computed by the method described in Art. 113.

It is scarcely necessary to state that the mode given in Art. 1 is the more advantageous of the two, not only from the utility of t preparatory calculations, but also from its being a more expeditious p of obtaining the values, as the trial of a few examples by each met will prove.

To find the Value of an Annuity.

Rule. Multiply the number of years' purchase found by the tables, by the yearly sum of which the value is required *.

Example. What is the value of an annuity of £364 to continue during the life of a person aged 36, assuming 4 per cent as the interest of money, and the rate of mortality the same as at Northampton ?

$$\begin{array}{lll} \text{Table 7,} & a_{36} = & \begin{array}{r} 13.8815 \\ 364 \\ \hline 555260 \\ 832890 \\ 416445 \\ \hline 5052{,}8660 \end{array} = £5052\ 17\ 4 \end{array}$$

A man holds an estate producing £56 2 6 per annum during the life of his wife aged 36; what is the value thereof, interest being 5 per cent, and the rate of mortality as at Chester ? (Probability Table 3.)

$$£56\ 2\ 6 = £56.125$$

$$a_{36} = \begin{array}{r} 13.8345 \\ 521.65 \\ \hline 691725 \\ 83007 \\ 1383 \\ 277 \\ 69 \\ \hline 776.461 \end{array} = £776\ 9\ 3.$$

120. *To find the Annuity which a Sum of Money will purchase.*

Rule. Divide the sum by the number of years' purchase the annuity is worth, according to the tables.

Example. What annuity receivable during the life of a female aged 36 may be purchased for £776 9 3 at 5 per cent interest, Chester rate of mortality ? (Probability Table 3.)

(Prob. Table 3,) $a_{36} = 13.8345$ £776 9 3 = £776.4625

$$\begin{array}{r} 13.8345)776.4625(56.125 = £56\ 2\ 6 \\ 691725 \\ \hline .847375 \\ 830070 \\ \hline 17305 \\ 3470 \\ 2767 \\ \hline .703 \end{array}$$

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* When the annuity is payable half-yearly, add $\frac{1}{4}$, and when payable m times a-year add $\frac{m-1}{2m}$, to the tabular value of the annuity; in the present example $(13.8815+.25)\times364$ is the present value when payable half-yearly, and $(13.8815.+.375)\times364$ is the present value when payable quarterly. (*Vide* Baily & Milne.)

121. If money produced no interest, the formula in Art. 112 would become

$$\frac{l_{m+1} + l_{m+2} + l_{m+3} + l_{m+4} + \dots\dots\dots l_{m+z}}{l_m};$$

this expression shows the average number of years that each individual *completes.*

122. The number of years *expectation of life* of an individual whose prospect of longevity is the same with that of individuals of the same age, at any particular place where observations of the rate of mortality have been made, is usually taken as the average number of years enjoyed by each individual at that place, as shown in the tables.

Let us suppose those who complete their mth year, but die before completing their $(m + 1)$th year, to die at equal intervals therein, so that, for every one who dies before the expiration of a half of the year, some other will survive so much more than the half-year; each individual who dies in the year survives therefore upon an average one-half of that year.

Of l_m persons who complete the mth year of their age, $l_m - l_{m+1}$ die in their $(m + 1)$th year, and l_{m+1} survive their $(m + 1)$th year; $\frac{l_m - l_{m+1}}{2}$ the number of years enjoyed by all those who die in the $(m+1)$th year, added to the l_{m+1} years enjoyed by those who complete their $(m+1)$th year, gives $\frac{l_m - l_{m+1}}{2} + l_{m+1} = \frac{l_m + l_{m+1}}{2}$ the number of years that will be enjoyed in the first year by these l_m persons or the survivors.

And in the same manner may be shown that

$$\frac{l_{m+1} + l_{m+2}}{2}, \quad \frac{l_{m+2} + l_{m+3}}{2}, \quad \frac{l_{m+3} + l_{m+4}}{2}, \quad \&c.$$

is the number of years that will be enjoyed in the 2nd, 3rd, 4th, &c., years by these l_m persons or the survivors.

If we continue these values to the oldest age in the table, and sum them together (making z as before the difference between the age m and the oldest in the table), we obtain the total number of years enjoyed by these l_m persons until they all cease to exist: viz.,

$$\frac{l_m + l_{m+1}}{2} + \frac{l_{m+1} + l_{m+2}}{2} + \frac{l_{m+2} + l_{m+3}}{2} + \frac{l_{m+3} + l_{m+4}}{2} + \dots\dots\dots$$
$$+ \frac{l_{m+z-1} + l_{m+z}}{2} + \frac{l_{m+z}}{2} = \frac{l_m}{2} + l_{m+1} + l_{m+2} + l_{m+3} + l_{m+4} \dots\dots\dots$$

$+ l_{m+z-1} + l_{m+z}$; this expression divided by l_m, the number of individuals amongst whom this quantity of existence is divided, gives the share of each, or in other words, the *expectation of life* of an individual aged m, which will be expressed by the symbol e_m:

$$\therefore e_m = \frac{1}{2} + \left(\frac{l_{m+1} + l_{m+2} + l_{m+3} + l_{m+4} + \ .\ .\ .\ .\ + l_{m+s-1} + l_{m+s}}{l_m}\right),$$

hence the following rule for finding the expectation of life:

"Divide the sum of the number who complete each age above the given one, by the number living at the given age, and to the quotient add half unity."

123. In forming a table of expectations for every age, we begin with the living at the oldest, adding thereto the living at the oldest but one, then to this sum the living at the oldest but two, and to this sum again the living at the oldest age but three; proceeding in this manner with each age throughout the table, we have the requisite dividends and divisors for finding the expectations.

The following calculations by the Northampton Rate of Mortality show the mode of forming a table of expectations:

	Expectation.	Additions checked.
$l_{96}=1$		1
$l_{95}=4$	$\frac{1}{4}+.5= .75=e_{95}$	4
5	$\frac{5}{9}+.5=1.05=e_{94}$	9
$l_{94}=9$		16
14	$\frac{14}{16}+.5=1.37=e_{93}$	24
$l_{93}=16$		34
30	$\frac{30}{24}+.5=1.75=e_{92}$	88 = sum of living above 90.
$l_{92}=24$		
54	$\frac{54}{34}+.5=2.09=e_{91}$	
$l_{91}=34$		
88	$\frac{88}{46}+.5=2.41=e_{90}$	
$l_{90}=46$		
..		

124. The present expectation of life after t years is

$$\frac{1}{l_m}\left(\frac{l_{m+t}+l_{m+t+1}}{2} + \frac{l_{m+t+1}+l_{m+t+2}}{2} + \frac{l_{m+t+2}+l_{m+t+3}}{2} + \ldots\ldots\right.$$
$$\left.\ldots + \frac{l_{m+s-1}+l_{m+s}}{2} + \frac{l_{m+s}}{2}\right),$$
$$=\frac{1}{l_m}\left(\frac{l_{m+t}}{2} + l_{m+t+1} + l_{m+t+2} + l_{m+t+3} + \ldots\ldots\ldots\ldots + l_{m+s+1} + l_{m+s}\right),$$
$$=\frac{l_{m+t}}{l_m} \times \frac{1}{l_{m+t}}\left(\frac{l_{m+t}}{2} + l_{m+t+1} + l_{m+t+2} + l_{m+t+3} + \ \ldots\ldots + l_{m+s-1} + l_{m+s}\right);$$

but $\frac{l_{m+t}}{l_m} = p_{m,\,t}$, the probability of a life aged m living t years, and the remaining part of the expression is the expectation of life at the age of $(m+t)$ years; the expression may therefore be written $e_{m+t} \cdot p_{m,\,t}$.

125. Hence the duration of life that a person has the present expec-

tation of enjoying after a given period is found by multiplying the expectation at the advanced age by the chance the individual has of attaining that age.

How many years has a male aged 50 the expectation of enjoying after the expiration of 10 years by the Chester rate?

(Table 2.) $$e_{m+t}\frac{l_{m+t}}{l_m} = e_{60}\times\frac{l_{60}}{l_{50}} = 13.96\times\frac{2778}{3675} = 10.55.$$

126. Since the expectation for the whole of life is made up of the expectation during the next t years, and of the expectation after that term, "the expectation for the next t years only is evidently equal to the difference between the expectation for the whole term of life and the expectation deferred for t years."

$$e_m - \frac{l_{m+t}}{l_m}\times e_{m+t}.$$

Example. How many years has a male aged 50 the expectation of enjoying during the next 10 years by the Chester rate?

$$e_m - \frac{l_{m+t}}{l_m}\times e_{m+t} =$$

$$e_{50} - \frac{l_{60}}{l_{50}}\times e_{60} = 19.32 - \frac{2778}{3675}\times 13.96 = 19.32 - 10.55 = 8.77.$$

127. Many persons who have but an imperfect knowledge of the subject, erroneously suppose that the value of an annuity payable during the life of an individual is found by calculating the value of an *annuity certain* for a number of years equal to the expectation of life of the individual.

By Art. 112 it appears, that if the probability of an individual surviving 1, 2, 3, &c. years to the extremity of life, be respectively multiplied by the present value of £1 due 1, 2, 3, &c. years, the sum of the several values thus found will be the value of an annuity on the life of that individual.

The expectation shows the *number of payments* received on an average by every person of the same age; if an annuity certain be calculated therefore for a term equal to the expectation, the longest period of discount introduced in the calculation will be the number of years' expectation; but in valuing a life annuity at the same age, although each individual receives on an average the same number of payments as are made upon an annuity certain, yet some of the probabilities are discounted for a longer term than is represented by the expectation; at the age of 30, for instance, the expectation is 30.80, which is the term for which the last payment of the annuity certain is discounted, while, in finding the true value of a life annuity, the probability of completing each year is discounted for every year a life may complete according to the tables; in which case the chance of receiving the payment at the age of 70 is discounted for 40 years, and for a greater period at every age above 70.

The present value of an *annuity certain* for the term of years that an individual has the expectation of enjoying is greater therefore than the value of the same annuity to cease on the failure of that individual's existence. At the age of 45, Chester rate of mortality amongst males, Table 2, the expectation is 22 years, for which term at 3 per cent the value of an annuity certain is 15.937, and the value of the life annuity at that age is 14.382. (Prob. Table 3.)

ANNUITIES ON JOINT LIVES.

128. When an annuity depends on the joint existence of any number of lives aged respectively m, m_1, m_2, &c., years, the present value of the annuity is represented by the symbol $a_{m,\, m_1,\, m_2,\, \&c.}$

By Art. 106, the present value of the expectation of receiving the annuity at the end of the first year when there are two lives aged m and m_1 is $\frac{l_{m+1} \cdot l_{m_1+1}}{l_m \cdot l_{m_1}} r$, the present value of the expectation of receiving the second year's payment of the annuity is $\frac{l_{m+2} \cdot l_{m_1+2}}{l_m \cdot l_{m_1}} r^2$; and if the value of the expectation of receiving each year's payment be found to the greatest age in the table, and the several values be summed together, the total will be the present value of the annuity.

$$a_{m,\, m_1} = \frac{l_{m+1} \cdot l_{m_1+1} \cdot r + l_{m+2} \cdot l_{m_1+2} r^2 + l_{m+3} \cdot l_{m_1+3} r^3 + \&c.}{l_m \cdot l_{m_1}}$$

multiplying the numerator and denominator by r^m we have

$$a_{m,\, m_1} = \frac{l_{m+1} \cdot l_{m_1+1} \cdot r^{m+1} + l_{m+2} \cdot l_{m_1+2} \cdot r^{m+2} + l_{m+3} \cdot l_{m_1+3} r^{m+3} + \&c.}{l_m \cdot l_{m_1} \cdot r^m}$$

hence the following rule:

Multiply the number living opposite each age in the table by the present value of £1 due the same number of years as the oldest age, then again each of these products by the number living at the corresponding age of the other life; thus, in finding the values of annuities on two joint lives when the difference of age is 5 years, the corresponding ages of the lives at one period of existence will be 36 and 41, in which case we find the product of the number of living given in the tables at the age of 41, and the present value of £1 due at the end of 41 years, and multiply this result by the number living at 36.

Having found the products at all the ages of a given difference from birth to the extremity of life, we begin at the oldest ages and find successively the sums of all the products above each combination.

Then the value of an annuity during the joint existence of two lives at any ages of the same difference as that for which the various products have been found may be obtained by dividing the sum of the products above the ages, by the products opposite to them.

129. If, previous to calculating the values of annuities on joint lives, calculations have been made of the values on single lives, the products opposite each age in the D column for the single lives will form part of the operation in finding the products for the joint lives.

130. When one life is a male and the other a female, and the rate of mortality distinguishes the sexes, the number of living at the age of the male must be taken from the table of mortality amongst males, and the living at the age of the female from the table of mortality amongst females.

Or, when there is no difference of sex, but it is thought proper to use different rates of mortality for the two lives, the number of living at the age of each of the individuals must be taken, in forming the products, from the corresponding rate of mortality.

131. The following calculation of the value of an annuity during the joint existence of a male aged 85 and a female aged 90, will illustrate what has been said, and show the methods by which the values in Table 23 were calculated (Chester 5 per cent) :

$$\begin{array}{llr}
 & \text{Male.} \quad \text{Female.} & \\
r^{100} \times l_{100} \times l_{95} = .00760049 \times & 23 \times 126 = & 22.03782 \\
r^{99} \times l_{99} \times l_{94} = .00798471 \times & 30 \times 158 = & 37.84753 \\
r^{98} \times l_{98} \times l_{93} = .00838395 \times & 37 \times 190 = & 58.93918 \\
r^{97} \times l_{97} \times l_{92} = .00880315 \times & 44 \times 221 = & 85.60183 \\
r^{96} \times l_{96} \times l_{91} = \underline{.00924331} \times & 51 \times 252 = & \underline{118.79502} \\
 & & 323.22138 \\
r^{95} \times l_{95} \times l_{90} = .00970547 \times & 68 \times 283 = & 186.77208 \\
r^{94} \times l_{94} \times l_{89} = .01019074 \times & 92 \times 313 = & 293.45255 \\
r^{93} \times l_{93} \times l_{88} = .01070028 \times & 116 \times 343 = & 425.7426 \\
r^{92} \times l_{92} \times l_{87} = .01123530 \times & 146 \times 384 = & 629.8959 \\
r^{91} \times l_{91} \times l_{86} = .01179706 \times & 176 \times 436 = & \underline{905.2590} \\
 & & 2764.3435 \\
r^{90} \times l_{90} \times l_{85} = .01238691 \times & 205 \times 510 = & 1295.0517.
\end{array}$$

$$a_{90.95} = \frac{323.22138}{186.77208} = 1.731.$$

$$a_{85.90} = \frac{2764.3435}{1295.0517} = 2.135.$$

132. The principle laid down for calculating annuities on two joint lives applies to finding the values on any number of joint lives: if the values were calculated on three lives when the differences of the ages are 5 and 1, the number in the D column opposite the ages 16, 21, and 22, would be equal to the product of the number of living at 21 and 22

multiplied by the present value of £1 due 22 years hence, multiplied by the living at 16.

What is the present value of an annuity of £45 5 0 payable during the joint lives of two males aged 30 and 35, by the Chester Rate of Mortality Table, when the interest of money is 3 per cent?

Table 23, $a_{30.35}=$ 13.544 £45 5*s.* $=$£45.25

```
      13.544
       45.25
      ------
       67720
      27088
     67720
    54176
  ----------
  612.86600 =£612 17 4.
```

What is the present value of an annuity of £50 payable during the *joint existence* of a male aged 30 and a female aged 40, Chester Rate of mortality, 5 per cent?

Table 23, $a_{30.40}=11.109$

```
  11.109
      50
  ------
  555.45 = £555 9 0.
```

What is the annuity that may be purchased for £800 on the joint lives of two females aged 45 and 50, Chester 3 per cent?

Table 23, $a_{45.50}=11.549$

Art. 120. $\frac{800}{11.549}=69.261=$ £69 5 3

DEFERRED AND TEMPORARY ANNUITIES.

133. Let the value of an annuity deferred n years on a life aged m, and then to continue during the remainder of life, be denoted by $a_{(m)_r}$, then the present value of the first payment of the annuity, which is to be received at the end of $(n+1)$ years provided the life shall continue to exist until that time, is found by multiplying the present value of £1 due at the end of $(n+1)$ years by the chance of the life surviving that period; and the present value of any other of the payments is found by multiplying the present value of £1 due in the number of years that must lapse from the present time, until the payment becomes due, by the chance the life has at present of surviving that term.

$$a_{(n)_r}=\frac{l_{m+n+1}\,r^{n+1}+l_{m+n+2}\,r^{n+2}+l_{m+n+3}\,r^{n+3}+l_{m+n+4}\,r^{n+4}+\&c.}{l_m}$$

$$=\frac{l_{m+n}\,r^n}{l_m}\times\frac{l_{m+n+1}\,r+l_{m+n+2}\,r^2+l_{m+n+3}\,r^3+l_{m+n+4}\,r^4+\&c.}{l_{m+n}}$$

134. In this formula, $\frac{l_{m+n} r^n}{l_m}$, is the present value of £1 due at the end of n years, multiplied by the chance of the life living n years, and the remaining part of the expression is the present value of an annuity on a life aged $m+n$ years; hence the following

Rule. Find the value of an annuity on a life older by the number of years the annuity is to be deferred, than the present age; multiply it by the present value of £1 due at the end of that term, and by the chance of the life surviving that term.

135. If the numerator and denominator of the expression be multiplied by r^m, its *value* remains unaltered, and becomes

$$a_{(m)|n} = \frac{l_{m+n+1} r^{m+n+1} + l_{m+n+2} r^{m+n+2} + l_{m+n+3} r^{m+n+3} + l_{m+n+4} r^{m+n+4}, + \&c.}{l_m r^m}$$

This formula, when we have tables calculated of the description mentioned in Art. 115, points out a very short method of calculating the values of deferred annuities; for the number in column N, opposite the age $(m+n)$ at which the annuity is to be entered upon, is the numerator of the fraction, and the number in column D, opposite the present age (m) is the denominator of the fraction; the formula by Davies's method is therefore

$$a_{(m)|n} = \frac{N_{m+n}}{D_m}.$$

136. *Rule.* Divide the number in column N, opposite the age at which the annuity will be entered upon, by the number in column D opposite the present age.

When the annuity depends on the joint existence of any number of lives respectively aged m, m_1, m_2, &c., the probability of their jointly surviving the term must evidently be substituted for the probability of one life surviving, *i.e.*

$$a_{(m,\, m_1,\, m_2,\, \&c.)|n} = \frac{l_{m+n} \cdot l_{m_1+n} \cdot l_{m_2+n} \;\&c.}{l_m \cdot l_{m_1} \cdot l_{m_2} \;\&c.} \cdot r^n \cdot a_{m+n,\, m_1+n,\, m_2+n,\, \&c.}$$

TEMPORARY ANNUITIES.

137. Let the present value of an annuity to continue the next n years provided any number of lives aged m, m_1, m_2, &c., continue jointly to exist during that term, be denoted by $a_{(m,\, m_1,\, m_2,\, \&c.)\overline{n|}}$. As the value of an annuity to continue for the next n years, together with the value of an annuity which is to be entered upon at the *expiration* of n years, and then continue during the remaining time of joint existence, is evidently equal to the value of the annuity on the lives for the whole period of joint existence, to be entered on immediately, we have the equation

$$a_{(m,\, m_1,\, m_2,\, \&c.)_{|n}} + a_{(m,\, m_1,\, m_2,\, \&c.)_{\overline{n|}}} = a_{m,\, m_1,\, m_2,\, \&c.}$$

by transposition, $a_{(m,\, m_1,\, m_2,\, \&c.)_{\overline{n|}}} = a_{m,\, m_1,\, m_2,\, \&c.} - a_{(m,\, m_1,\, m_2,\, \&c.)_{|n}}$:

Rule. From the value of an annuity for the whole term of life, subtract the value of an annuity deferred for the number of years which the temporary annuity has to continue; the difference will be the required value of the temporary annuity.

138. By Davies's method

$$a_{(m)\overline{n|}} = a_m - a_{(m)|n} = \frac{N_m}{D_m} - \frac{N_{m+n}}{D_m} = \frac{N_m - N_{m+n}}{D_m}. \quad \text{(Art. 112 and 136.)}$$

Rule. From the number in column N opposite the present age, subtract the number in column N opposite the age at which the annuity will cease, and divide the difference by the number in column D opposite the present age.

139. The present value of an annuity for n years, payable at the *beginning* of each year, will be unity added to the present value of an annuity for (n — 1) years, payable at the *end* of each year, *i. e.*

$$1 + a_{(m)\overline{n-1|}} = 1 + \frac{N_m - N_{m+n-1}}{D_m} = \frac{D_m + N_m - N_{m+n-1}}{D_m} = \frac{N_{m-1} - N_{m+n-1}}{D_m}$$

the quantity $D_m + N_m$ being, by the construction of the tables, equal to N_{m-1}.

Similarly, the present value of £1 paid down, and of an annuity of £1 for n years payable at the end of each year, will be

$$1 + a_{(m)\overline{n|}} = \frac{N_{m-1} - N_{m+n}}{D_m}$$

140. To find what annual premium should be paid in lieu of a gross sum to secure a deferred annuity.

When a reversionary annuity is secured by an annual premium the first payment is usually made immediately, and the subsequent payments at the end of each year until the reversion is entered upon.

As the present value of an annuity of £1 for the term increased by one year's purchase, is to £1, so is the present value of any other sum to the equivalent annual premium.

$$1 + a_{(m)\overline{n|}} : 1 :: a_{(m)|n} : \frac{a_{(m)|n}}{1 + a_{m\overline{n|}}} = \frac{a_{(m)|n}}{1 + a_m - a_{(m)|n}}$$

$$\text{or } \frac{N_{m-1} - N_{m+n}}{D_m} : 1 :: \frac{N_{m+n}}{D_m} : \frac{N_{m+n}}{N_{m-1} - N_{m+n}} = \text{annual premium.}$$

141. We have just supposed $n+1$ annual payments to be secure the deferred annuity: if we suppose only n payments have

$$1+a_{(m)\overline{n-1}|} : 1 :: \underset{\rceil n}{a_{(m)}} : \frac{\underset{\rceil n}{a_{(m)}}}{1+a_{(m)\overline{n-1}|}}$$

or
$$\frac{N_{m-1}-N_{m+n-1}}{D_m} : 1 :: \frac{N_{m+n}}{D_m} : \frac{N_{m+n}}{N_{m-1}-N_{m+n-1}}$$

Examples.

1. Required the present value of an annuity of £30, to be upon at the expiration of nine years, and then to continue during of an individual aged 36. (Carlisle 4 per cent.)

$\underset{\rceil 9}{a_{(36)}} = \frac{l_{45}}{l_{36}} r^9 a_{45}$ $1.04^{-9} = .702587$ $a_{45} = 14.1046$

Table 21, $6401.41 = a_{45}$ inverted

$$\begin{array}{r}
702587\\
281035\\
7026\\
281\\
42\\
\hline
9.90971\\
30\\
\hline
297.29130\\
7274\\
\hline
118916520\\
20810391\\
594583\\
208104
\end{array}$$

$7274 = l_{45}$ inverted (7

Table 1, $l_{36} = 5307)1405295.98(264.800 = £26$

$$\begin{array}{r}
10614\\
\hline
34389\\
31842\\
\hline
25475\\
21228\\
\hline
42479\\
42456\\
\hline
\end{array}$$

...

Or thus:

$N_{m+n} = N_{36+9} = N_{45} = 11414.218$

30

$D_{36} = 1293.150)\overline{342426.54}\,(264.8 = £264\ 16\ 0$

$$\begin{array}{r}
\cdot\cdot\ \underline{2586300}\\
8379654\\
\underline{7758900}\\
620754\\
\underline{517260}\\
103494\\
\underline{103452}\\
42
\end{array}$$

2. What is the present value of an annuity of £40, to be entered upon at the expiration of 15 years, and then continue during the *joint* existence of two males now respectively aged 25 and 30 years? (Chester 3 per cent.)

$$\underset{\rceil 15}{a_{(25,30)}} = \frac{l_{40} \cdot l_{45} \cdot r^{15}}{l_{25} \cdot l_{30}} \cdot a_{40,45}$$

$$\log . \underset{\rceil 15}{a_{(25,30)}} = \log . l_{40} + \log . l_{45} + \log r^{15} - \log l_{25} - \log . l_{30} + \log a_{40,45}$$

Table 23, $\log a_{40,45} = \log 10.977 = 1.0404837$

Table 2, Prob. $\log l_{40} = \log 4516 = 3.6547539$

do. $\log l_{45} = \log 4116 = 3.6144754$

(Table 8, Pt. 1) $\log r^{15} = \log 1.03^{-15} = \bar{1}.8074417$

Table 2, Prob. $-\log l_{25} = -\log 5459 = \bar{4}.2628869$

$-\log l_{30} = -\log 5127 = \bar{4}.2901367$

0.6701783 $£4.67928 = \underset{\rceil 15}{a_{(25,30)}}$

40

$187.1712 = £187\ 3\ 5$

3. What is the present value of an annuity of £30 for the next nine years, dependent on the existence of a life aged 36? (Chester 3 per cent.)

$a_{36} = 15.8558$

30

475.6740

264.800 = value of the deferred annuity, Ex. 1.

$210.874 = £210\ 17\ 6$

By Davies's method,—

$$\frac{N_m - N_{m+n}}{D_m} = \frac{N_{36} - N_{45}}{D_{36}}$$

$N_{36} = 20503.891$
$N_{45} = 11414.218$
$\overline{\quad 9089.673}$
$\quad 30$

$D_{36}=1293.150)\overline{272690.19}(210.873 = £210\ 17\ 6$
2586300
$\overline{\quad 1406019}$
1293150
$\overline{\quad 112869}$
103452
$\overline{\quad 9417}$
9052
$\overline{\quad 365}$

4. What is the present value of an annuity of £90 for the n years, to depend on the joint existence of a male aged 50, and a aged 55? (Chester 3 per cent, Table 23.)

$$a_{50,55} - a_{(50,55)\overline{10}|} = a_{50,55} - \frac{l_{60}\,.\,l_{65}\,.\,r^{10}}{l_{50}\,.\,l_{55}}\,a_{60,65}$$

Prob. Tab. 2, log. l_{60} $=\log 2778$ $=3.4437322$
do. log l_{65} $=\log 2956$ $=3.4707044$
do. ar. co log $l_{50}=$ ar. co log 3675 $=\bar{4}.4347427$
do. ar. co log $l_{55}=$ ar. co log 3934 $=\bar{4}.4051656$
Table 8, Part 1, $\log 1.03^{-10}=\bar{1}.8716278$
Table 23, $\log a_{60,65}=\log 6.624$ $=0.8211203$
$\overline{0.4470930}=2.800=a_{(}$
$9.423=a_{50,}$
$\overline{6.623}=a_{(}$
90
$\overline{596.070}=5$

5. An annuity of £30 during the life of a person now ag is to be entered upon at the end of nine years: what annua inium should be required, supposing the first payment made diately, and the subsequent payments at the end of each year duri next nine years, subject to the existence of the life? (Carlisle cent.)

$$\frac{a_{(m)\overline{n}|}}{1+a_{(m)\overline{n}|}} = \frac{a_{45} \times \dfrac{l_{45}\,.\,r^{9}}{l_{36}}}{1 + a_{36} - a_{45}\,.\,r^{9}\,.\,\dfrac{l_{45}}{l_{36}}}$$

Table 21, $a_{45}=14.10460$, Table 1, $l_{36}=5307$, $l_{45}=4727$,
Table 4, Part 1, $r^{9}=.702587$.

$$a_{\underset{\rceil 9}{(36)}} = \frac{14.10460 \times 4727 \times .702587}{5307} = \frac{46843.189}{5307} = 8.82668$$

$$1 + a_{\underset{9\rceil}{(36)}} = 1 + a_{36} - a_{\underset{\rceil 9}{(36)}} = 1 + 15.85577 - 8.82668 = 8.02909$$

$$\frac{8.82668}{8.02909} = \begin{array}[t]{r} 1.09934 \\ 30 \\ \hline 32.98020 \end{array} \begin{array}[t]{l} = \text{annual premium for a deferred annuity of £1} \\ \\ = 32\ \ 19\ \ 7, \text{ required annual premium.} \end{array}$$

By Davies's method,—

$$\text{Art. 140, } \frac{N_{m+n}}{N_{m-1} - N_{m+n}} = \frac{N_{45}}{N_{35} - N_{45}} = \frac{11414.2176}{21797.0406 - 11414.2176} =$$

$$\frac{11414.2176}{10382.8230} = \begin{array}[t]{r} 1.09934 \\ 30 \\ \hline 32.98020 \end{array} \begin{array}[t]{l} \\ \\ = \text{£32 19 7, as before.} \end{array}$$

6. What annual premium, the first to be paid down, and the remainder at the end of each year for the next ten years, should be paid to secure an annuity of £90, to be entered upon at the expiration of 10 years, and then to continue during the joint existence of a male now aged 50 and a female now aged 55 ? (Chester 3 per cent, Table 23.)

$$\text{By Example 4, page 129, } a_{\underset{\rceil 10}{(50,\ 55)}} = \begin{array}[t]{r} 2.800 \\ 90 \\ \hline \end{array}$$

$$1 + a_{\underset{10\rceil}{(50,\ 55)}} = 7.6\dot{2}\dot{3})\begin{array}[t]{l} 252,000(33.058 = \text{£33 1 2} \\ \underline{22869} \\ \ 23310 \\ \ \underline{22869} \\ \ \ .44100 \\ \ \ \ \underline{38115} \\ \ \ \ .5985 \end{array}$$

7. A party proposes to lay out £400 in the purchase of an annuity, to be entered on at the expiration of nine years, to continue so long as a life now aged 36 shall survive that time: what sum per annum will he be entitled to? (Carlisle 4 per cent.)

By Example 5, page 129, $a_{\underset{\rceil 9}{(36)}} = 8.82668$

$$8.82668 : 1 :: 400 : \frac{400}{8.82668} = 45.317 = \text{£45 6 4}$$

8. A person now aged 36 wishes to pay £10 down, and a further annual premium of £10 at the end of each year for the next nine years, to secure an annuity, to be entered upon at the expiration of that term, for the remainder of his life: what sum per annum should he obtain? (Carlisle 4 per cent.)

By Example 5, page 130, $10(1+a_{(36)\,9\rceil}) = 80.2909$

Ditto $a_{(36)\,\rceil 9} = 8.82668$

$$8.82668 : 1 :: 80.2909 : \frac{80.2909}{8.82668} = 9.096 = £9\ 1$$

ENDOWMENTS.

142. From the above expressions we may find the annual pre
quired to secure a sum upon an individual attaining any partic
By Art. 105, the present value of £1 to be received at the
years is $\frac{l_{m+n}}{l_m} r^n = \frac{l_{m+n} \cdot r^{m+n}}{l_m r^m} = \frac{\text{D}_{m+n}}{\text{D}_m}$.

If we suppose n payments, the first paid immediately, th
premium will be $\frac{\text{D}_{m+n}}{\text{D}_m} \times \frac{\text{D}_m}{\text{N}_{m-1} - \text{N}_{m+n-1}} = \frac{\text{D}_{m+n}}{\text{N}_{m-1} - \text{N}_{m+n-1}}$.

$$\frac{\text{D}_{21}}{\text{N}_{13} - \text{N}_{20}} = \frac{2719.999}{75523.846 - 52960.516} \times 100 = \frac{271999.9}{22563.33} = 1$$

annual premium to secure £100 at the end of 7 years to a c
14. (Northampton 3 per cent.)

143. To find the value of an annuity granted on the longe
number of lives.

Let there be any number of lives aged m, m_1 m_2, &c., res
then, by Art. 111, the probability of some one or more of t
being in existence at the end of any year from the present tim
nth, on which the receipt of the payment of the annuity at t
that year depends, is $1 - (1 - p_{m,n})(1 - p_{m_1,n})(1 - p_{m_2}$
if n be made equal to unity the expression will give the probabi
or more of the lives being in existence at the end of the first ye
multiplied by the present value of £1 due at the end of one
show the present value of the payment to be received at the e
first year; if n be 2, and the value of the expression in thi
multiplied by the present value of £1 due at the end of two y
result will be the present value of the payment to be received a
of the second year; and the sum of the present values of each
for every age to the end of the Table will evidently be the pres
of the annuity.

$$r\{p_{m,1} + p_{m_1,1} + p_{m_2,1}, \&\text{c.} - p_{(m,m_1),1} - p_{(m,m_2),1} - p_{(m_1,m_2),1}$$
$$p_{(m,m_1,m_2),1}, \&\text{c.}\}$$
$$r^2\{p_{m,2} + p_{m_1,2} + p_{m_2,2}, \&\text{c.} - p_{(m,m_1),2} - p_{(m,m_2),2} - p_{(m_1,m_2),2}$$
$$p_{(m,m_1,m_2),2}, \&\text{c.}\}$$
$$r^3\{p_{m,3} + p_{m_1,3} + p_{m_2,3}, \&\text{c.} - p_{(m,m_1),3} - p_{(m,m_2),3} - p_{(m_1,m_2),3}$$
$$p_{(m,m_1,m_2),3}, \&\text{c.}\}$$

&c. &c. &c.

If we add these quantities perpendicularly, the sum of those in the t column (by Art. 112) will be the present value of an annuity on a aged m; those in the second, of an annuity on a life aged m_1; in the d on a life aged m_2, &c.;—the total value of these expressions is efore

$$+a_{m_1}+a_{m_2}+\&c.-a_{m,m_1}-a_{m,m_2}-a_{m_1,m_2}-\&c.+a_{m,m_1,m_2}\ \&c.$$

14. When there are three lives, it becomes

$$a_m+a_{m_1}+a_{m_2}-a_{m,m_1}-a_{m,m_2}-a_{m_1,m_2}+a_{m,m_1,m_2}.$$

ule. Find the value of the annuity on each of the single lives; to sum add the value of an annuity on the three joint lives, and sub- the sum of the values on each pair of joint lives.

ample. What is the present value of an annuity of £50 payable the death of the last survivor of three lives respectively, aged 18, nd 36 years? (Northampton, 3 per cent.)

5. As there are no tables of annuities on three lives, we approxi- by the following rule, which is given by Mr. Baily in his Trea- n Life Annuities:—Take the value of an annuity on the joint of the two oldest, and find the age of a single life of the same . Then find the value of an annuity on the joint lives of the one found and the remaining life of the three, which diminished by .05 give very nearly the true value.

$a_{18} = 19.0131$ $\qquad a_{18.27} = 13.7363$ Table 8.
$a_{27} = 17.4674$ $\qquad a_{18.36} = 12.7635$ do.
$a_{36} = 15.7288$ $\qquad a_{27.36} = 12.2295 = a_{51}$ do.
$a_{18.27.36} = 10.3887 = a_{18.51} - .05$ $\qquad 38.7293$
62.5980
38.7293
$23.8687 \times 50 = 1193.435 = £1193\ 8\ 9.$

6. When the annuity is on the longest of two lives, the formula nes

$$a_m+a_{m_1}-a_{m,m_1}.$$

le. From the sum of the values on each of the single lives, sub- the value of the annuity on the joint lives.

hat is the present value of an annuity of £30 on the longest of ves aged 39 and 43? (Northampton 3 per cent.)

7, $a_{39} = 15.0750$
$a_{43} = 14.1626$
29.2376
8, $a_{39.43} = 10.5485$
18.6891
30
$560.673 = £560\ 13\ 5.$

What is the present value of an annuity of £50 on the longest (two lives; one a male aged 35, the other a female aged 40? (Cheste 5 per cent.)

$$\begin{array}{lll}
\text{(Table 3. Prob.)} & a_{35} & = 13.1892 \\
\quad\text{do.} & a_{40} & = \underline{13.3287} \\
 & & \ 26.5179 \\
\text{Table 23.} & a_{35.40} & = \underline{10.6690} \\
 & & \ 15.8489 \\
 & & \ \underline{50} \\
 & & \ 792.445 = £792\ 8\ 11.
\end{array}$$

147. To find the present value of a deferred annuity on the longes of any number of lives.

If the annuity be deferred n years, the first payment will have to b received at the end of $n+1$ years; the present value of which is foun by multiplying the present value of £1 due at the end of $n+1$ year by the probability of the existence of the survivor at the end of th term; and the present value of any other payment is found in lik manner by multiplying the probability of the event on which the pay ment depends taking place, by the present value of £1 due the num ber of years that must lapse before the payment will be due; the severa terms of the series in Art. 143 represent these values; and the sum (them all after the first n terms will be the value of the deferred annuity the sum of these terms in the first perpendicular column is

$$p_{m,\,n+1}\,r^{n+1} + p_{m,\,n+2}\,r^{n+2} + p_{m,\,n+3}\,r^{n+3} + \text{\&c.},$$

which, by Art. 133, is the present value of an annuity deferred n yea on a life aged m, and the sums in the other columns also evidently r present values of deferred annuities: if therefore, in the formula obtaine for the value of an annuity to be continued for the whole term of lif we substitute the present values of deferred annuities for the prese values of immediate annuities for the term of each life, the expressi for the required value of the deferred annuity will be obtained.

148. When there are three lives the formula is

$$a_{(m)_{\rceil n}} + a_{(m_1)_{\rceil n}} + a_{(m_2)_{\rceil n}} - a_{(m,\,m_1)_{\rceil n}} - a_{(m,\,m_2)_{\rceil n}} - a_{(m_1,\,m_2)_{\rceil n}} + a_{(m,\,m_1,\,m_2)_{\rceil n}}$$

149. And for the longest of two lives the expression is

$$a_{(m)_{\rceil n}} + a_{(m_1)_{\rceil n}} - a_{(m,\,m_1)_{\rceil n}}\,.$$

150. If the annuity depend on the *joint* existence of the lives duri the n years that the annuity is deferred, the formula will be

$$p_{(m,\, m_1),\, n}\, r^n \left(a_{m+n} + a_{m_1+n} - a_{m+n,\, m_1+n}\right)$$

$$= \frac{l_{m+n}\, l_{m_1+n}}{l_m \cdot l_{m_1}} \cdot r^n \left(a_{m+n} + a_{m_1+n} - a_{m+n,\, m_1+n}\right).$$

What is the present value of an annuity of £50 deferred 10 years, and then to continue until the death of the survivor of two males, now aged 35 and 40 years? (Chester 3 per cent.)

$$a_{(35)\rceil 10} + a_{(40)\rceil 10} - a_{(35.40)\rceil 10} = a_{45} \cdot \frac{l_{45}}{l_{35}} r^{10} + a_{50} \cdot \frac{l_{50}}{l_{40}} r^{10} - a_{45.50} \cdot \frac{l_{45} \cdot l_{50}}{l_{35} \cdot l_{40}} r^{10}.$$

$$\begin{array}{rlrl}
\log a_{45} = & \log.\ 14.3812 & = & 1.1577951 \\
\log l_{45} = & \log\ 4116 & = & 3.6144754 \\
\text{ar. co} \log.\ l_{35} = \text{ar. co} & \log\ 4849 & = & \bar{4}.3143478 \\
\log r^{10} = & \log 1.03^{-10} & = & \bar{1}.8716278 \\
\hline
 & & & 0.9582461 \quad 9.083
\end{array}$$

$$\begin{array}{rlrl}
\log a_{50} = & \log\ 13.0950 & = & 1.1161055 \\
\log l_{50} = & \log\ 3675 & = & 3.5652573 \\
\text{ar. co} \log\ l_{40} = \text{ar. co} & \log\ 4516 & = & \bar{4}.3452461 \\
\log r^{10} = & \log\ 1.01^{-10} & = & \bar{1}.8716278 \\
\hline
 & & & 0.8982367 \quad 7.911
\end{array}$$

$$\begin{array}{rlrl}
\log a_{45.50} = & \log\ 9.823 & = & 0.9922441 \\
\log l_{45} - & \log.\ l_{35} + \log r^{10} & = & \bar{1}.8004510 \\
\log l_{50} - & \log l_{40} & = & \bar{1}.9105034 \\
\hline
 & & & 0.7031985 \quad 5.049
\end{array}$$

$$\begin{array}{rl}
9.083 = & a_{(35)\rceil 10} \\
7.911 = & a_{(40)\rceil 10} \\
\hline
16.994 & \\
5.049 = & a_{(35.40)\rceil 10} \\
\hline
11.945 & \\
50 & \\
\hline
597.25 = & £597\ 5\ 0.
\end{array}$$

What is the present value of £50 per annum, to be entered upon at the end of 10 years, provided two males, now aged 35 and 40, shall jointly survive that period, and then to continue until the death of the last survivor? (Chester 3 per cent.)

$$\frac{l_{45} \cdot l_{50}}{l_{35} \cdot l_{40}} r^{10} (a_{45} + a_{50} - a_{45.50})$$

$a_{45}. = 14.3812$

$a_{50} = 13.0950$

$\overline{27.4762}$

$a_{45.50} = 9.823$

$\log \quad \overline{17.6532} = 1.2468234$

$\log. l_{45} - \log. l_{35} + \log r^{10} = \bar{1}.8004510$ as in last example.

$\log l_{50} - \log l_{40} = \bar{1}.9105034$ do.

$\overline{0.9577778} = 9.0736$

50

$\overline{453.680} = £453$

151. To find the value of a *temporary annuity* on any nu
lives.

Rule. Find the value of the annuity for the whole term of
of the annuity deferred as many years as the temporary annu
continue; the difference between them will be the value of th
rary annuity. (Art. 137.)

Example. What is the present value of an annuity of £5
next 10 years, depending on the existence of the joint lives
survivor of two males aged 35 and 40? (Chester 3 per cent.)

$a_{35} = 16.9758$

$a_{40} = 15.6537$

$\overline{32.6295}$

$a_{35.40} = 12.2160$

$\overline{20.4135}$

By the last example but one the value of the deferred annuity is 11.945

$\overline{8.4685}$

50

$\overline{423.425} = £423$

DEFERRED TEMPORARY ANNUITIES.

152. Suppose A entitled to an annuity to be entered upo
expiration of d years, and then to continue during the exist
life now aged m, and B to enter upon a similar annuity at the e
of $d + n$ years, the difference between the two will be the va
annuity to be entered upon at the expiration of d years, and
continue n years, subject to the existence of a life now aged m

Its value is $\frac{l_{m+d}}{l_m} r^d \cdot a_{m+d} - \frac{l_{m+d+n}}{l_m} \cdot r^{d+n} \cdot a_{m+d+n}$.

By Davies's formulæ—

$$\frac{N_{m+d}}{D_m} - \frac{N_{m+d+n}}{D_m} = \frac{N_{m+d} - N_{m+d+n}}{D_m}.$$

The present value of £1 paid down, and of an annuity of £1 for d years, subject to the existence of a life aged m, is (Art. 139)

$$\frac{N_{m-1} - N_{m+d}}{D_m}.$$

153. If the total number of payments be d, the first of which is paid down, the present value will be

$$1 + \frac{N_m - N_{m+d-1}}{D_m} = \frac{D_m + N_m - N_{m+d-1}}{D_m} = \frac{N_{m-1} - N_{m+d-1}}{D_m}.$$

154. To find the annual premium necessary to secure an annuity for n years, to be entered upon at the expiration of d years, we must divide the present value of the deferred annuity by unity added to the present value of an annuity for d years, which gives

(Art. 139)

$$\frac{N_{m+d} - N_{m+d+n}}{D_m} \times \frac{D_m}{N_{m-1} - N_{m+d}} = \frac{N_{m+d} - N_{m+d+n}}{N_{m-1} - N_{m+d}}.$$

155. When the total number of annual payments is d, we divide the present value of the deferred annuity by unity added to the present value of an annuity for $d-1$ years, which gives

$$\frac{N_{m+d} - N_{m+d+n}}{D_m} \times \frac{D_m}{N_{m-1} - N_{m+d-1}} = \frac{N_{m+d} - N_{m+d+n}}{N_{m-1} - N_{m+d-1}}.$$

Example. Required the single premium to secure an annuity of £50 for 7 years, to be entered upon at the expiration of 9 years, subject to the existence of a life now aged 40. (Carlisle 4 per cent.)

$$7+9=16$$

$$a_{(40)_9} = \frac{l_{49}.r^9}{l_{40}} a_{49} = \frac{4458 \times .702587 \times 13.15312}{5075} = 8.11769$$

$$a_{(40)_{16}} = \frac{l_{56}.r^{16}}{l_{40}} a_{56} = \frac{4000 \times .533908 \times 10.96607}{5075} = 4.61467$$

$$\begin{array}{lr} & \overline{3.50302} \\ & 50 \\ £175\ 3\ 0 & \overline{175.1510} \end{array}$$

Also,

$$\frac{N_{40+9} - N_{40+9+7}}{D_{40}} = \frac{N_{49} - N_{56}}{D_{40}} = \frac{8580.9492 - 4878.0207}{1057.0669} = \frac{3702.9285}{1057.0669} =$$

$$\begin{array}{r} 3.50302 \\ 50 \\ \hline 175.1510 \end{array} = £175\ 3\ 0$$

156. To find the value of an annuity payable so long as two out of three lives shall jointly be in existence.

If the annuity be on three lives, A, B, and C, respectively aged m, m_1, m_2 years, the chance of its being received at the end of any particular year depends on either of the following events: 1°, that the three lives, A, B, C, be *all* in existence; 2°, that A and B be alive, and C dead; 3°, that A and C be alive and B dead; 4°, that B and C be both alive and A dead: the following table shows the chance of each separate event happening in the nth year, the sum of which shows the probability of the nth year's payment of the annuity being received:

That there will be	Alive.	Dead.	The probability is
1	A B C	None	$p_{(m,m_1,m_2),n}$
2	A B	C	$p_{(m,m_1),n}(1-p_{m_2,n})=p_{(m,m_1),n}-p_{(m,m_1,m_2),n}$
3	A C	B	$p_{(m,m_2),n}(1-p_{m_1,n})=p_{(m,m_2),n}-p_{(m,m_1,m_2),n}$
4	B C	A	$p_{(m_1,m_2),n}(1-p_{m,n})=p_{(m_1,m_2),n}-p_{(m,m_1,m_2),n}$

their sum, $p_{(m,m_1),n}+p_{(m,m_2),n}+p_{(m_1,m_2),n}-2p_{(m,m_1,m_2),n}$;

multiplied by r^n, gives the present value of the nth year's payment of the annuity. If n be made equal to 1, 2, 3, 4, &c., and the corresponding values of the expression be found, they will show the present value of the payments of the annuity in the 1st, 2nd, 3rd, 4th, &c., years, and the sum of these values for every year in which, by the tables, the annuity can be received, will be the present value of the required annuity: this sum (Art. 142) will be

$$a_{m,m_1}+a_{m,m_2}+a_{m_1,m_2}-2\,a_{m,m_1,m_2}.$$

157. When the value of any expression is found for the successive values of n when made equal to 1, 2, 3, 4, &c., years, the sum of these values continued for the whole term of existence may be denoted by prefixing the symbol Σ to the expression; when the sum is to be found only for a limited number of years, as t, it may be denoted by the character $\Sigma_{t\rceil}$.

Example. What is the present value of £80 per annum, to cease on the failure of the joint existence of the last two survivors of three lives aged 23, 25, and 30? (Northampton 3 per cent.)

$$\begin{array}{rrl} a_{23.25} = & 13.5308 & \qquad a_{23.25.30} = a_{23.48} - .05 = 10.7184 \\ a_{23.30} = & 13.0978 & \qquad\qquad\qquad\qquad\qquad\qquad\qquad 2 \\ a_{25.30} = & \underline{12.9661} = a_{48} & \qquad\qquad\qquad\qquad\qquad\qquad 21.4368 \\ & 39.5947 & \\ & \underline{21.4368} & \\ & 18.1579 & \\ & \underline{80} & \\ & 1452.632 = & £1452\ 12\ 8 \end{array}$$

REVERSIONS.

158. To find the value of an annuity on a life A aged m, after the extinction of another P aged m_1.

The chance of the life A receiving the annuity in any year, as the nth from the present time, depends on his being alive at the end of that time, the life P having failed previously, the probability of which is

$$p_{m,n}(1-p_{m_1,n}) = p_{m,n} - p_{(m,m_1),n}$$

and $\Sigma\, r^n\, (p_{m,n} - p_{(m,m_1),n}) = a_m - a_{m,m_1}$, the value of the reversion.

Rule. From the value of the annuity on the life in expectation subtract the value of the annuity on the two joint lives.

Example. What sum should be paid to secure an annuity of £55 to a male aged 35, during his life, after the death of a female aged 40? (Chester 5 per cent.)

$$\begin{array}{rr} a_{35} = & 13.1892 \\ a_{35.40} = & \underline{10.6690} \\ & 2.5202 \\ & \underline{55} \\ & 126010 \\ & \underline{12601} \\ & 138.611 = £138\ 12\ 3 \end{array}$$

159. If the reversion be secured by an annual premium the whole amount of payments will consist of the premium paid down at the present time, and of an annuity during the joint existence of the two lives; the annual premium will therefore be found by dividing the single premium by unity added to the present value of an annuity of £1 during the joint lives.

The annual premium for the above reversion will be

$$\frac{138.611}{1+a_{35,40}} = \frac{138.611}{11.669} = 11.879 = £11\ 17\ 7.$$

160. If the annuity cease at the expiration of t years from the pre time the present value will be

$$a_{(m)\overline{t|}} - a_{(m, m_1)\overline{t|}}.$$

161. To find the value of the annuity payable during the joint liv A and B respectively, aged m and m_1, and also during t years afte death of B, provided A shall live so long.

The value of the annuity during the two joint lives is a_{m, m_1}.

The remaining part consists of two portions, one during the t years, the value of which, by the last Article, is $a_{m\overline{t|}} - a_{(m, m_1)\overline{t|}}$, the other after t years; the value of any payment of which, as the will be the present value of £1, due at the end of n years, multiplie the chance of A surviving that period, and of B having died with years of that time, viz.—

$$r^n . p_{m,n} (p_{m_1, n-t} - p_{m_1, n}) = r^n (p_{m,n} . p_{m_1, n-t} - p_{(m, m_1), n})$$

in which, $p_{m,n} . p_{m_1, n-t} = \frac{l_{m+n}}{l_m} . \frac{l_{m_1+n-t}}{l_{m_1}} = \left(\frac{l_{m+n}}{l_m} . \frac{l_{m_1+n-t}}{l_{m_1-t}}\right) . \frac{l_{m_1-t}}{l_{m_1}} = \frac{p_{(m, m_1-}}{p_{m_1-t,}}$

the expression therefore becomes $r^n \left(\frac{p_{(m, m_1-t), n}}{p_{m_1-t, t}} - p_{(m, m_1), n}\right)$,

the successive values of which, being found for every year after the will give for their sum

$$\frac{a_{(m, m_1-t)}{}^{\rceil t}}{p_{m_1-t, t}} - a_{(m, m_1)}{}^{\rceil t};$$

adding to which the value of the other portions, we obtain for the to value required

$$a_{m, m_1} + a_{(m)\overline{t|}} - a_{(m, m_1)\overline{t|}} + \frac{a_{(m, m_1-t)}{}^{\rceil t}}{p_{m_1-t, t}} - a_{(m, m_1)}{}^{\rceil t} = a_{(m)\overline{t|}} + \frac{a_{(m, m_1-t)}{}^{\rceil t}}{p_{m_1-t, t}}$$

By Davies's Tables,—

$$a_{(m)\overline{t|}} = \frac{N_m - N_{m+t}}{D_m}.$$

When m is greater than $m_1 - t$,

$$\frac{a_{(m, m_1-t)}{}^{\rceil t}}{p_{m_1-t, t}} = \frac{N_{m+t, m_1}}{D_{m, m_1-t}} . \frac{l_{m_1-t}}{l_{m_1}} = \frac{N_{m+t, m_1}}{l_m . l_{m_1-t} r^m} . \frac{l_{m_1-t}}{l_{m_1}} = \frac{N_{m+t, m_1}}{l_m . l_{m_1} r^m} = \frac{N_{m+t, m}}{D_{m, m_1}}$$

When m_1-t is greater than m,

$$\frac{a_{(m, m_1-t)\rceil t}}{p_{m_1-t, t}}=\frac{\mathrm{N}_{m+t, m_1}}{\mathrm{D}_{m, m_1-t}} \cdot \frac{l_{m_1-t}}{l_{m_1}}=\frac{\mathrm{N}_{m+t, m_1}}{l_m . l_{m_1-t}\, r^{m_1-t}} \cdot \frac{l_{m_1-t}}{l_{m_1}}=$$

$$\frac{\mathrm{N}_{m+t, m_1}}{l_m . l_{m_1} . r^{m_1}} . r^t=\frac{r^t . \mathrm{N}_{m+t, m_1}}{\mathrm{D}_{m, m_1}}.$$

162. To find the value of an annuity on a life A, aged m, after the failure of the *joint existence* of two other lives, P and Q, aged m_1 and m_2 years.

The chance of receiving the annuity in the nth year is

$$p_{m, n}(1-p_{(m_1, m_2), n})=p_{m, n}-p_{(m, m_1, m_2), n} ;$$

the value of the reversion is therefore

$$\Sigma\, r^n\,(p_{m, n}-p_{(m, m_1, m_2), n})=a_m-a_{m, m_1, m_2}$$

and the annual premium $=\dfrac{a_m-a_{m, m_1, m_2}}{1+a_{m, m_1, m_2}}$.

163. If A does not enter on possession until after the death of the *survivor* of P and Q, the chance of receiving the annuity in the nth year is

$p_{m, n}(1-p_{m_1, n})(1-p_{m_2, n})=p_{m, n}-p_{(m, m_1), n}-p_{(m, m_2), n}+p_{(m, m_1, m_2), n}$ and

$\Sigma\, r^n\,(p_{m, n}-p_{(m, m_1), n}-p_{(m, m_2), n}+p_{(m, m_1, m_2), n})=a_m-a_{m, m_1}-a_{m, m_2}+a_{m, m_1, m_2}$

is the present value of the reversion.

The annual premium, which is payable so long as A is in existence, with either P or Q, is found by dividing the single premium by

$$1+\Sigma\, r^n\, p_{m, n}\,(p_{m_1, n}+p_{m_2, n}-p_{(m_1, m_2), n})=$$

$$1+\Sigma\, r^n\{p_{(m, m_1), n}+p_{(m, m_2), n}-p_{(m, m_1, m_2), n}\}=1+a_{m, m_1}+a_{m, m_2}-a_{m, m_1, m_2} .$$

164. The value of an annuity on the joint lives of A and B, aged m and m_1, after the death of P, aged m_2, is

$\Sigma r^n(1-p_{m_2, n})\, p_{(m, m_1), n}=\Sigma\, r^n\,(p_{(m, m_1), n}-p_{(m, m_1, m_2), n})=a_{m, m_1}-a_{m, m_1, m_2}$,

the annual premium which is payable during the joint existence of A, B, and P, is found by dividing by $1+a_{m, m_1, m_2}$.

165. The present value of an annuity on the survivor of two lives, A and B, aged m and m_1, after the death of P, aged m_2, is

$$\Sigma\, r^n\,(1-p_{m_2, n})\,(p_{m, n}+p_{m_1, n}-p_{(m, m_1), n})=$$

$$\Sigma\, r^n\{p_{m, n}+p_{m_1, n}-p_{(m, m_1), n}-p_{(m, m_2), n}-p_{(m_1, m_2), n}+p_{(m, m_1, m_2), n}\}=$$

$$a_m+a_{m_1}-a_{m, m_1}-a_{m, m_2}-a_{m_1, m_2}+a_{m, m_1, m_2}.$$

The divisor for the annual premium which is payable so long as P is in existence with either of the lives A or B, is

$$1+\Sigma\, r^n\,(p_{m,n}+p_{m_1.n}-p_{(m,m_1),n})\,p_{m_2,n}$$

$$1+\Sigma\, r^n\,(p_{(m,m_2),n}+p_{(m_1,m_2),n}-p_{(m,m_1,m_2),n})=1+a_{m,m_2}+a_{m_1 m_2}-a_{m,m_1,m_2}.$$

Examples.

166. Required the present value of an annuity of £40 during the joint existence of two lives, A and B, respectively aged 66 and 33, and seven years after the death of B, provided A shall live so long. (Northampton 3 per cent.)

Art. 158. $a_{(m)_{\overline{t}|}}+\dfrac{a_{(m,\,m_1-t)_{\overline{t}|}}}{p_{m_1-t,\,t}}$

$$a_{(66)_{\overline{7}|}}=a_{66}-\frac{l_{73}}{l_{66}}.r^7.a_{73}=7.9947-\frac{992}{1552}\times .813092\times 5.7938=$$

$$7.9947-\frac{4673.1637}{1552}=7.9947-3.0111=4.9836$$

$$\frac{a_{(66.26_{\overline{7}|}}}{p_{26.7}}=\frac{l_{26}}{l_{33}}\left(\frac{l_{73}}{l_{66}}\cdot.\frac{l_{33}}{l_{26}}r^7\cdot a_{33.73}\right)=\frac{l_{73}}{l_{66}}\cdot r^7\cdot a_{33.73}$$

$$\frac{992}{1552}\times .813092\times 5.2354=\frac{4222.7691}{1552}=2.7209$$

$$\begin{array}{r} 4.9836+2.7209=7.7045 \\ 40 \\ \hline 308.1800 \end{array} = £308\ \ 3\ \ 7$$

(By Davies's Tables). Here m is greater than m_1-t.

$$\frac{N_{66}-N_{73}}{D_{66}}=\frac{1763.756-664.293}{220.615}=4.9836$$

$$\frac{N_{m+t,\,m_1}}{D_{m,\,m_1}}=\frac{N_{73.33}}{D_{66.33}}=\frac{2497112}{917758}=\begin{array}{r} 2.7209 \\ \hline 7.7045 \end{array}\ \times 40=308.180 \text{ as before.}$$

What is the present value of an annuity of £40, to be entered upon after the failure of the joint existence of two lives, aged 29 and 30, and then to continue during the life of a person now aged 18? (Northampton 3 per cent.)

$$a_{18}-a_{18.29.30}\qquad \text{(Art. 162.)}$$

$$\begin{array}{lrl} a_{18} & = & 19.0131 \\ a_{18.29.30} & = & \underline{10.7472}=a_{18.49}-.05 \text{ (Art. 145)} \\ & & 8.2659 \\ & & 40 \\ \hline & & 330.636=£330\ \ 12\ \ 9 \end{array}$$

What is the present value of an annuity of £40, to revert to a person now aged 18 after the death of the survivor of two lives, aged 29 and 30? (Northampton 3 per cent.)

$$a_{18} - a_{18.29} - a_{18.30} + a_{18.29.30} \quad \text{(Art. 163.)}$$

$$\begin{array}{ll} a_{18} & = 19.0131 \\ a_{18.29.30} & = \underline{10.7472} \\ & 29.7603 \\ & \underline{26.9900} \\ & 2.7703 \\ & \underline{40} \\ & 110.812 = £110\ 16\ 3 \end{array} \qquad \begin{array}{ll} a_{18.29} & = 13.5452 \\ a_{18.30} & = \underline{13.4448} \\ & 26.9900 \end{array}$$

What is the present value of an annuity of £40, to revert from the present possessor, at the death of a person aged 30, to another individual during the joint lives of two persons, aged 18 and 29? (Northampton 3 per cent.)

$$a_{18.29} - a_{18.29.30} \quad \text{(Art. 164.)}$$

$$\begin{array}{ll} a_{18.29} & = 13.5452 \\ a_{18.29.30} & = \underline{10.7472} \\ & 2.7980 \\ & \underline{40} \\ & 111.920 = £111\ 18\ 5 \end{array}$$

167. Those problems in survivorships which involve several of the preceding cases are next to be considered.

Example. An annuity of £20 is granted on the life of the survivor of A and B, aged 15 and 20 years, to be divided equally between them while they are both living, and after the death of either of them the survivor is to receive the whole of the annuity for the remainder of his life: what is the value of A's share therein? (Northampton 3 per cent.)

A's share consists of two separate parts; one entitling him to half the annuity during the joint existence of himself and B, the other entitling him to the annuity during the remainder of his life after the decease of B.

The value of the 1st part is . . $\frac{1}{2} a_{15.20}$

of the 2nd . . $\underline{a_{15} - a_{15.20}}$ (Art. 158.)

the sum of the two . . . $a_{15} - \frac{1}{2} a_{15.20}$ is the formula for finding the value of A's share.

By substituting the value of the annuity on the life of B for that on the life of A, we have the value of B's share, $a_{20} - \frac{1}{2} a_{15.20}$,

$$\begin{array}{ll} a_{15} & = 19.6577 \\ \frac{1}{2} a_{15.20} & = \underline{7.3299} \\ & 12.3278 \\ & \underline{20} \\ & 246.556 = £246\ 11\ 1 \\ & \text{A's share} \end{array} \qquad \begin{array}{ll} a_{20} & = 18.6385 \\ \frac{1}{2} a_{15.20} & = \underline{7.3299} \\ & 11.3086 \\ & \underline{20} \\ & 226.172 = £226\ 3\ 5 \\ & \text{B's share.} \end{array}$$

168. An annuity of £30 is granted on the longest of three lives, B, and C, respectively aged 16, 21, and 26 years, which is to equally divided between them whilst they are all living, and on t decease of either of them it is to be equally divided between the si vivors during their joint lives, and then to belong entirely to the l survivor during his life. Required the value of A's interest there (Northampton 3 per cent.)

A's interest consists, 1°, of one-third of the annuity on the joi lives ($\frac{1}{3}a_{16.21.26}$) ; 2°, of one-half the annuity during the joint existen of A and B after the death of C ; 3°, of one-half of the annuity duri the joint existence of A and C after the death of B ; 4°, of the ent annuity during the remainder of his life after the death of the other tv

The following table shows the separate values, the sum of which the value of A's interest therein :

Alive.	Dead.	Value of the Annuity to be received.	
A B C	none	$\frac{1}{3}\, a_{16.21.26}$	
A B	C	$\frac{1}{2}\,(a_{16.21}-a_{16.21.26})$	Art.164
A C	B	$\frac{1}{2}\,(a_{16.26}-a_{16.21.26})$	do.
A	B C	$a_{16}-a_{16.21}-a_{16.26}+a_{16.21.26}$	Art. 163

the sum $a_{16}-\frac{1}{2}\,a_{16.21}-\frac{1}{2}\,a_{16.26}+\frac{1}{3}\,a_{16.21.26}=$ value of A's interest.

$7.2285=\frac{1}{2}\,a_{16.21}$
$\underline{7.0149}=\frac{1}{2}\,a_{16.26}$
14.2434

$3)\underline{11.5641}=a_{16.21.26}=a_{16.45}-.05$
$3.8547=\frac{1}{3}\,a_{16.21.26}$
$\underline{19.4358}=a_{16}$
23.2905
$\underline{14.2434}$
9.0471
$\underline{30}$
$271.413=$ £271 8 3 = value of A interest.

169. An annuity of £30 on the longest of three lives, A, B, and (aged respectively 18, 28, and 33 years, is to be divided equally betwe A and B during their joint lives, but on the decease of either of them be divided equally between the two remaining lives, and afterwards be wholly enjoyed by the survivor. Required the value of A's sha therein. (Northampton 3 per cent.)

The following table shows the different parts of which A's interest composed, and the corresponding values :

Alive.	Dead.	Value of the Annuity to be received.	
A B	..	$\frac{1}{2}a_{18.28}$	
A C	B	$\frac{1}{2}a_{18.33}-\frac{1}{2}a_{18.28.33}$	Art. 164.
A	B C	$a_{18}-a_{18.28}-a_{18.33}+a_{18.28.33}$	Art. 163.

the sum, $a_{18}-\frac{1}{2}a_{18.28}-\frac{1}{2}a_{18.33}+\frac{1}{2}a_{18.28.33}$ = value of A's interest.

$$\begin{array}{llr}
2)\underline{10.5668} = a_{18.28.33} = a_{18.30} - .05 & & 6.8212 = \frac{1}{2}a_{18.28} \\
\quad 5.2834 & & \underline{6.5609} = \frac{1}{2}a_{18.33} \\
\quad \underline{19.0131} = a_{18} & & 13.3821 \\
\quad 24.2965 & & \\
\quad \underline{13.3821} & & \\
\quad 10.9144 & & \\
\quad \quad \underline{30} & & \\
\quad 327.432 = £327\ 8\ 8 = \text{value of A's interest.} & &
\end{array}$$

By proceeding in a similar manner we obtain the expression for the value of B's interest—

$$a_{28}-\frac{1}{2}a_{18.28}-\frac{1}{2}a_{28.33}+\frac{1}{2}a_{18.28.33}.$$

170. An annuity of £50 on the longest of three lives, respectively aged 18, 28, and 33 years, is to be divided equally between A and B during their joint lives; if A dies first, B and C are to enjoy it equally during their joint lives, and the survivor of them is to have the whole; but if B dies first, A is to enjoy the whole during his life, and after his decease the whole annuity goes to C.

Required the value of their respective shares.

The formula for A's proportion, which is of the same description as in Art. 167, is $a_{18}-\frac{1}{2}a_{18.28}$.

To find B's share:

Alive.	Dead.	Annuity to be received.	
A and B	..	$\frac{1}{2}a_{18.28}$	
B and C	A	$\frac{1}{2}a_{28.33}-\frac{1}{2}a_{18.28.33}$	Art. 164.
B	A and C	$a_{28}-a_{18.28}-a_{28.33}+a_{18.28.33}$	Art. 163.

the sum = $a_{28}-\frac{1}{2}a_{18.28}-\frac{1}{2}a_{28.33}+\frac{1}{2}a_{18.28.33}$ = B's share.

C's share:

Alive.	Dead.	Annuity to be received.	
B and C	A	$\frac{1}{2}a_{28.33}-\frac{1}{2}a_{18.28.33}$	Art. 164.
C	A and B	$a_{33}-a_{18.33}-a_{28.33}+a_{18.28.33}$	Art. 163.

the sum $=a_{33}-a_{18.33}-\frac{1}{2}a_{28.33}+\frac{1}{2}a_{18.28.33}$ = C's share.

$$\begin{array}{ll} 2)\underline{10.5668} = a_{18.28.38} & \\ 5.2834 & \\ \underline{17.2890} = a_{28} & \\ 22.5724 & \\ \underline{13.0583} & \\ 9.5141 & \\ \underline{50} & \\ 475.7050 = \pounds 475\ 14\ 1 & \text{B's share.} \end{array}$$

$$\begin{array}{l} 6.8212 = \tfrac{1}{2} a_{18.28} \\ \underline{6.2371} = \tfrac{1}{2} a_{28.38} \\ 13.0583 \end{array}$$

$$\begin{array}{ll} 5.2834 = \tfrac{1}{2} a_{18.28.38} & \\ \underline{16.3432} = a_{38} & \\ 21.6266 & \\ \underline{19.3589} & \\ 2.2677 & \\ \underline{50} & \\ 113.\ 385 = \pounds 113\ 7\ 9 & \text{C's share.} \end{array}$$

$$\begin{array}{l} 13.1218 = a_{18.38} \\ \underline{6.2371} = \tfrac{1}{2} a_{28.38} \\ 19.3589 \end{array}$$

171. An annuity of £40 on the longest of three lives, A, B, and respectively aged 18, 23, 28, is to be enjoyed by A during his life, after his decease is to be divided equally between B and C during t joint lives, and the survivor of them is to have the whole; what is value of B's interest therein? Northampton 3 per cent.

Alive.	Dead.	Value of the Annuity to be received.	
B and C	A	$\tfrac{1}{2} a_{23.28} - \tfrac{1}{2} a_{18.23.28}$	Art. 16
B	A C ..	$a_{23} - a_{18.23} - a_{23.28} + a_{18.23.28}$	Art. 16

the sum $= a_{23} - a_{18.23} - \tfrac{1}{2} a_{23.28} + \tfrac{1}{2} a_{18.23.28} =$ B's share.

Interchanging B and C in the expression for B's share we have formula for the value of C's interest therein.

$$a_{28} - a_{18.28} - \tfrac{1}{2} a_{23.28} + \tfrac{1}{2} a_{18.23.28}$$

$$\begin{array}{l} 2)\underline{11.0984} = a_{18.23.28} = a_{18.47} - .05 \\ 5.5492 \\ \underline{18.1486} = a_{23} \\ 23.6978 \\ \underline{20.7224} \\ 2.9754 \\ \underline{40} \\ 119.\ 016 = 119\ 9\ 4 \text{ B's share.} \end{array}$$

$$\begin{array}{l} 14.0822 = \tfrac{1}{2} a_{18.23} \\ \underline{6.6402} = \tfrac{1}{2} a_{23.28} \\ 20.7224 \end{array}$$

$$\begin{array}{rl} 5.5492 & = \tfrac{1}{3}\,a_{18.23.28} \\ 17.2890 & = a_{28} \\ \hline 22.8382 & \\ 20.2826 & \\ \hline 2.5556 & \\ 40 & \\ \hline 102.2240 & = \pounds 102\ 4\ 6\ \text{C's share} \end{array} \qquad \begin{array}{rl} 13.6424 & = a_{18.28} \\ 6.6402 & = \tfrac{1}{2}\,a_{23.28} \\ \hline 20.2826 & \end{array}$$

172. An annuity certain of £50 for the term of 15 years is to be enjoyed by P and his heirs during the joint existence of two lives, A and B, aged 14 and 19 years, and if that joint existence fail before the expiration of 8 years the annuity is to go to Q and his heirs for the remainder of the term of 15 years. To determine the value of Q's interest in the annuity. Northampton 3 per cent.

Q's interest may be divided into two parts:

1st. The chance of enjoying the annuity during the first 8 years.
2nd. The chance of enjoying it after the expiration of that term.

The amount of the interests of P and Q together for the first 8 years is evidently equal to the present value of an annuity certain for that term, the expression for which by Art. 49 is $\dfrac{1-r^8}{i}$, and the value of P's interest for the same term is the present value of a temporary annuity for 8 years on the lives of A and B; the expression for which, by Art. 136 and 137, is

$$a_{14.19} - \frac{l_{22.27}}{l_{14.19}}\, r^8 . a_{22.27};$$

if this be subtracted from the value of the annuity certain, it will leave the value of Q's interest for the term; *i. e.*

$$\frac{1-r^8}{i} - a_{14.19} + \frac{a_{22.27} . r^8 . l_{22} . l_{27}}{l_{14} . l_{19}}.$$

Q's interest after the expiration of 8 years will be the present value of an annuity for 7 years after the expiration of 8 years, provided the joint existence of A and B shall have failed within that time, the chance of which is by Art. 109, $1 - \dfrac{l_{22}}{l_{14}} \times \dfrac{l_{27}}{l_{19}}$; the present value of the second part of Q's interest is therefore

$$\left(1 - \frac{l_{22}}{l_{14}} \times \frac{l_{27}}{l_{19}}\right) . \frac{r^8 - r^{15}}{i};$$

this, added to the value of Q's interest for the first 8 years, will give the value of his interest in the annuity; viz.,

$$\frac{1}{i}\left[1-r^8+\left(1-\frac{l_{22}}{l_{14}}\times\frac{l_{27}}{l_{19}}\right)(r^8-r^{15})\right]-a_{14.19}$$

$$+\frac{a_{22.27}\,r^8\,l_{22}\,l_{27}}{l_{14}.l_{19}}\,.$$

$$1-\frac{l_{22}\times l_{27}}{l_{14}\times l_{19}}=1-\frac{4985\times4610}{5473\times5199}=1-\frac{22980850}{28454127}$$

$$=1-.807646=.192354$$

$$1-r^8=1-.789409=.210591$$

$$\frac{{}_{22.27}r^8.l_{22}\,l_{27}}{l_{14}.l_{19}}=13.4336\times.789409\times.807646=$$

$$8.5648.$$

$$\begin{array}{rr}
r^8= & .789409\\
r^{15}= & .641862\\
\hline
 & .147547\\
 & 453291.\\
\hline
 & 147547\\
 & 132792\\
 & 2951\\
 & 443\\
 & 74\\
 & 6\\
\hline
\left(1-\frac{l_{22}.l_{27}}{l_{14}.l_{19}}\right)(r^8-r^{15}) & =.0283813\\
1-r^8 & =.210591\\
 & .03\overline{).238972}\\
\hline
\frac{1}{i}\left[1-r^8+\left(1-\frac{l_{22}.l_{27}}{l_{14}.l_{19}}\right)(r^8-r^{15})\right] & =\ 7.9657\\
\frac{a_{22.27}\,r^8\,l_{22}.l_{27}}{l_{14}.l_{19}} & =\ 8.5648\\
\hline
 & 16.5305\\
a_{14.19} & =14.8708\\
\hline
 & 1.6597\\
 & 50\\
\hline
 & 82.985=82\ 19\ 8
\end{array}$$

173. The probability of the existence of any two lives that may be proposed, both failing at the same instant of time, is less than any that can be assigned.

For the number of instants in the possible duration of either of them is greater than any that can be assigned; and as the failure of both the lives at exactly the same time can take place at only one of those instants, the fraction showing the probability will have unity for the numerator, and for the denominator a number greater than any that can be assigned.

174. Two lives, A and B, being proposed, if both the lives fail before the expiration of an assigned small portion of time, it is equally probable that one of them in particular, as A, will die before or after the other.

Let x be the number of persons of the same age, constitution, state of health, &c., as A that die within the same time, and let them die at x equal intervals therein, which may be assumed for small portions of time.

And let y be the number of lives of the same age, &c. with B, that die within the same time, and let them die at y equal intervals therein.

Suppose B to be the mth in order of the y lives that fail during the term, and since $y : x :: m : \frac{xm}{y}$ the number of such lives as A that will have failed previously, the probability that A shall have been one is $\frac{m}{y}$

Suppose B to be the mth in order from the *end* of the term, then the number of such lives as A that fail between the death of B and the end of the term is $\frac{xm}{y}$, and that A will be one of them the probability is $\frac{m}{y}$.

The two suppositions of the order in which B's life may fail are equally probable, for some one must die the mth in order from the end of the term, and some other the mth in order from the beginning; and B or any other is as likely to fail at any one of the y periods of failure as at another.

So that for every way whereby the life of A may fail before that of B, there is another way equally probable for its failing after B.

175. And the probability of any one of three lives in particular, A, B, C, dying first, as A is $\frac{1}{3}$.

For if z be the number of lives of the same age, &c. as C that die within the term, and we suppose as before, B to be the mth in order of the y persons that fail therein, the probability of the life A failing previously is $\frac{m}{y}$; and in the same manner may be shown that $\frac{m}{z}$ is the probability of the life C failing previously; and the probability of A and C both failing previously is $\frac{m}{z} \times \frac{m}{y}$. Art. 107.

And it may be demonstrated in a similar way that if B die the mth in order from the end of the term the probability of A and C failing after B is $\frac{m}{z} \times \frac{m}{y}$; therefore it is equally probable that the life of B will fail the first or the last of the proposed lives.

If A or C die first, it is equally probable that in the remainder of t
term B will die either second or last of the three.

If A or C die last, it is equally probable that B will die first or seco
of the three.

We have shown that if A or C die first of the three it will be equal
probable that B will die second or last, and if A or C die last it
equally probable that B will die first or second; and we have also prov
that the probability of B failing first is the same as of his failing las
whence it is evident that for every way in which the life of B can f
second there is another way, equally probable, in which it can fail fir
and a third way, equally probable, in which it can fail last.

And since it is certain that B must die first, second, or third, the su
of these three probabilities is unity, and as each event is equally pr
bable, the fraction $\frac{1}{3}$ is the probability of any one of them happening.

176. The probability of the three lives failing in any particular ord
as C, A, B, is $\frac{1}{6}$; for the probability of the life of C failing first is $\frac{1}{3}$,
just shown, and the probability of A dying before B is $\frac{1}{2}$; therefo
$\frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$ is the probability of the particular order of survivorsh
taking place.

177. To find the probability of a life failing in any particular year.

The probability of any life or lives *failing* in any particular year w
be expressed by using the letter q, in the same manner as we have us
the letter p to denote the chance of living.

Let the probability required be that a life aged m will die in the n
year from the present time. The number now aged m, who, by t
Tables, survive $n - 1$ years, or, which is the same thing, *ent*
upon their $(m + n)$th year, is l_{m+n-1}, and the number who *comple*
their $(m+n)$th year is l_{m+n}.; the difference between these is the numb
who die in the nth year, which, divided by the number living at the ag
of m years, gives the present chance of an individual aged m dying i
the nth year from this time.

$$q_{m,n} = \frac{l_{m+n-1} - l_{m+n}}{l_m} = p_{m,n-1} - p_{m,n}. \quad \text{(Art. 104.)}$$

If there be any number of lives, and we call x the probability of the
last v survivors jointly entering upon nth year, y the probability of their
jointly surviving it, and z the probability of their failing in that year,
then, since it is certain that they must either die before the nth year, the
probability of which is $(1-x)$, in the nth year, or after it

$$1 - x + y + z = 1,$$

by transposition, $z = x - y$; hence the following general rule. The
probability of the joint existence of the last v survivors of any number of
lives failing in the nth year is equal to the excess of the probability of
their jointly entering upon it above the probability of their jointly
surviving it.

(Art. 104.)

$$p_{m,\,n-1}=\frac{l_{m+n-1}}{l_m}=\frac{l_{m+n-1}}{l_{m-1}}\times\frac{l_{m-1}}{l_m}=\frac{l_{m+n-1}}{l_{m-1}}\div\frac{l_m}{l_{m-1}}=\frac{p_{m-1,\,n}}{p_{m-1,\,1}},$$

when there are more lives than one it may be similarly shown that

$$p_{(m,\,m_1,\,m_2,\,\&c.),\,n-1}=\frac{p_{(m-1,\,m_1-1,\,m_2-1),\,n}}{p_{(m-1,\,m_1-1,\,m_2-1),\,1}}.$$

178. To determine the probability that one, in particular, of two given lives, A and B, aged m and m_1, shall die before the other.

This event happening in any year, as the nth, must take place from one or other of these two events, either by A dying in that year and B surviving it, or by both dying in the nth year, A having died first.

That there will die		
in the nth year	after it	the probability is
A	B	$(p_{m,\,n-1}-p_{m,\,n})\,p_{m_1,\,n}$
A and B, A having died first	neither	$\frac{1}{2}(p_{m,\,n-1}-p_{m,\,n})\,(p_{m_1,\,n-1}-p_{m_1,\,n})$ Art. 174.
	their sum	$\frac{1}{2}(p_{m,\,n-1}-p_{m,\,n})\,(p_{m_1,\,n-1}+p_{m_1,\,n})$

is the probability of A dying before B in the nth year, which we write thus:—

$$\underset{(1)}{q}{}_{(m,\,m_1),\,n}\,, \quad \text{and } \Sigma\underset{(1)}{q}{}_{(m,\,m_1),\,n}\,,$$

is the total probability of A dying before B in any year during the possible term of their joint existence.

179. To find $\Sigma\underset{(1)}{q}{}_{(m,\,m_1),\,n}$, when $\Sigma\underset{(1)}{q}{}_{(m+1,\,m_1+1),\,n}$ is given.

If A and B at the ages m, m_1, were certain of jointly surviving one year, the probability of A dying before B would then be $\Sigma\underset{(1)}{q}{}_{(m+1,\,m_1+1),\,n}$; but the probability of A and B jointly surviving one year is $p_{(m,\,m_1),\,1}$, therefore $p_{(m,\,m_1),\,1}\ \Sigma\underset{(1)}{q}{}_{(m+1,\,m_1+1),\,n}$ is the probability of A dying before B after the first year, and the probability of his dying before B in the first year is $\frac{1}{2}(1-p_{m,\,1})(1+p_{m_1,\,1})$; the sum of the probabilities of A dying before B in the first year, and A dying before B after the first year, is the total probability required.

$$\Sigma\underset{(1)}{q}{}_{(m,\,m_1),\,n}=\tfrac{1}{2}(1-p_{m,\,1})\,(1+p_{m_1,\,1})+p_{(m,\,m_1),\,1}\times\Sigma\underset{(1)}{q}{}_{(m+1,\,m_1+1),\,n}\,.$$

When the age of the older of the two lives is the oldest age in the Table,

$\Sigma \underset{(1)}{q}_{(m+1,\, m_1+1),\, n} \times p_{(m,\, m_1),\, 1} = 0$, and the remaining part of the expression is easily computed.

180. By means of this formula a table may be formed of the probability of one life failing before another at any ages; for, if we commence with finding the probability of the event happening at the oldest ages they jointly complete, we can, by means of the result, find the probability for lives each one year younger; and this new probability again enables us to find the probability on lives each one year younger than these last; continuing in the same manner, the probabilities can be found for all the ages these two lives can jointly complete.

181. The probability of the failure of the joint existence of the two lives in the next t years is $1 - p_{(m,\, m_1),\, t}$, and as this event must happen either by A dying before B, or by B dying before A,

$$\underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m,\, m_1),\, n} + \underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m_1,\, m),\, n} = 1 - p_{(m,\, m_1),\, t},$$

by transposing $\underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m_1,\, m),\, n} = 1 - p_{(m,\, m_1),\, t} - \underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m,\, m_1),\, n}$.

When t is greater than the difference between the age of the older life and the extreme age in the table, it becomes

$$\Sigma\, \underset{(1)}{q}_{(m_1,\, m),\, n} = 1 - \Sigma\, \underset{(1)}{q}_{(m,\, m_1),\, n}.$$

182. The probability of the life of A failing in the next t years is $1 - p_{m,\, t}$, and this event must take place by A dying either first, or second of the two lives A and B:

$$\underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m,\, m_1),\, n} + \underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m,\, m_1),\, n} = 1 - p_{m,\, t};$$

by transposition, $\underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m,\, m_1),\, n} = 1 - p_{m,\, t} - \underset{t\rceil}{\Sigma}\, \underset{(1)}{q}_{(m,\, m_1),\, n}$, the probability of A dying second in the next t years.

When t is greater than the difference between the age of A and the extreme age in the table it becomes

$$\Sigma\, \underset{(2)}{q}_{(m,\, m_1),\, n} = 1 - \Sigma\, \underset{(1)}{q}_{(m,\, m_1),\, n}.$$

183. The probability of both the lives failing in the next t years is $(1 - p_{m,\, t})\,(1 - p_{m_1,\, t})$, which probability is the sum of the chances of A dying after B in the term, and of B dying after A in the term.

$$\underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m,\, m_1),\, n} + \underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m_1,\, m),\, n} = (1 - p_{m,\, t})\,(1 - p_{m_1,\, t}),$$

$$\underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m_1,\, m),\, n} = (1 - p_{m,\, t})\,(1 - p_{m_1,\, t}) - \underset{t\rceil}{\Sigma}\, \underset{(2)}{q}_{(m,\, m_1),\, n}.$$

184. To find the present value of an annuity on the life of A aged m, after the failure of the joint existence of two other lives, B and C, aged m_1 and m_2, provided that event take place by the death of B.

The present value of the nth year's payment of the annuity is

$$\underset{n\rceil}{\Sigma}\, \underset{(1)}{q}_{(m_1,\, m_2),\, n} \times p_{m,\, n}\, r^n,$$

d the value of $\sum\limits_{n\rceil} \underset{(1)}{q}_{(m_1, m_2), n}$ being variable during the possible term of e joint existence of B and C, there is no other general and certain thod of calculating the present values of the annual payments during at period, than to calculate the value of each year's payment separately, and add the whole together.

Let the number of years between the age of the older of the lives B d C, and the limiting age in the table be denoted by z, then the present value of the annual payments to be received after that period will be

$$\sum \underset{(1)}{q}_{(m_1, m_2), n} \times a_{\underset{\rceil z}{m}} .$$

The payment of the annuity during any of the first z years, as the h, depends on the following events; first, that A and C shall be ing, and B dead, the probability of which is $p_{(m, m_2), n} - p_{(m, m_1, m_2), n}$; cond, that A shall be living, and B and C both dead, B having died st. Let y be assumed as the constant probability during the first years, that provided B and C be both dead, B shall have died first f the two, then the probability of the second event is

$$(1 - p_{m_1, n})(1 - p_{m_2, n})\, p_{m, n} = y(p_{m, n} - p_{(m, m_1), n} - p_{(m, m_2), n} + p_{(m, m_1, m_2, n});$$

dding to this the probability of the first event, we have

$$p_{(m, m_2), n} - p_{(m, m_1, m_2), n} + y(p_{m, n} - p_{(m, m_1), n} - p_{(m, m_2), n} + p_{(m, m_1, m_2), n}).$$

185. If the annual decrement be supposed to be constant during the term for each of the lives, then y will become $\frac{1}{2}$, and the expression will become

$$\tfrac{1}{2}(p_{m, n} - p_{(m, m_1), n} + p_{(m, m_2), n} - p_{(m, m_1, m_2), n});$$

therefore the value of the annuity for the first z years is

$$\tfrac{1}{2}(a_{\underset{z\rceil}{m}} - a_{\underset{z\rceil}{(m, m_1)}} + a_{\underset{z\rceil}{(m, m_2)}} - a_{\underset{z\rceil}{(m, m_1, m_2)}}),$$

to which if we add $\sum \underset{(1)}{q}_{(m_1, m_2), n} \times a_{\underset{\rceil z}{m}}$, we have the total value,

$$\tfrac{1}{2}(a_{\underset{z\rceil}{m}} - a_{\underset{z\rceil}{(m, m_1)}} + a_{\underset{z\rceil}{(m, m_2)}} - a_{\underset{z\rceil}{(m, m_1, m_2)}}) + \sum \underset{(1)}{q}_{(m_1, m_2), n}\, a_{\underset{\rceil z}{m}}.$$

ASSURANCES ON LIVES.

186. When an engagement is entered into to secure the payment o a sum on the death of an individual, in consideration of a stipulate single or annual payment, such transaction is denominated an *Assuranc* on the life of that individual.

The object of the present part of this Treatise is to investigate rule for determining the proper premiums, single or annual, that should b charged in different cases of Life Assurances.

In the valuation of annuities the money was supposed payable at th end of any year, in the event of the life being in existence at the en of the year; so, in determining the values of assurances, it is assume in making the calculations, that the money is payable, not at the exac time of the failure of existence, but at the *end* of the year in which th failure of the particular life or lives shall take place.

The formula will also assume the sum assured to be £1, from whic the value of an assurance of any other sum may evidently be found b multiplying by that sum.

The same letter of the alphabet will be used as the characteristic fo denoting the present value of an assurance as was used to denote th present value of an annuity; the italic *capital* (A) representing th assurance, and the small italic (a) the annuity.

187. To determine $A^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}}$, the present value of an assurance on the failure of the joint existence of the last v survivors of any number of lives aged m, m_1, m_2, &c. respectively.

The present value of the expectation of receiving the sum at the end of the nth year is found by multiplying the probability of the event taking place in the nth year by the present value of £1 due at the end of n years, which gives (Art. 177)

$$r^n\left\{p^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)},\, n-1} - p^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)},\, n}\right\};$$

and if there be found the present value of the expectation of receiving the sum at the end of each particular year during the whole time which they may exist, the sum of these values will be the present value of £1 to be received at the end of the year in which the failure of the joint existence shall take place, whenever that event may happen.

$$A^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}} = \Sigma(1+i)^{-n}\left\{p^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}.\, n-1,} - p^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}.\, n}\right\};$$

but $$\Sigma\,(1+i)^{-n}\,p^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}.\, n} = a^{\,v}_{\overline{(m,\, m_1,\, m_2,\, \&c.)}}.$$

and $$\Sigma(1+i)^{-n}\, p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, n-1} = (1+i)^{-1}\Big\{p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, 0}$$

$$+p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, 1}(1+i)^{-1}+p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, 2}(1+i)^{-2}+p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, 3}(1+i)^{-3}$$

$$+\&c.\Big\}$$

but $p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, 0}$, the probability of the joint existence of the last v survivors at the end of 0 years, that is, of their being alive at the present moment is unity, and the remaining part of the expression is

$$\Sigma(1+i)^{-n} p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, n} = a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}$$

$$\therefore \Sigma(1+i)^{-n}\, p_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}},\, n-1} = (1+i)^{-1}\Big\{1 + a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}\Big\}$$

$$A_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}} = (1+i)^{-1}\Big\{1 + a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}\Big\} - a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}} =$$

$$(1+i)^{-1}+(1+i)^{-1}.a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}} - a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}} = r-(1-r)\, a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}$$

$$= \frac{1 - i\, a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}}{1+i}$$

The formula

$$r-(1-r)\, a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}, \quad \text{or} \quad \frac{1-i a_{\overset{v}{\overline{(m,\, m_1,\, m_2,\, \&c.)}}}}{1+i}$$

may be used with equal convenience for finding the present value, or if the calculation be made by both methods, one will verify the other.

The first of these formula is the one employed by Mr. Milne, the latter by Mr. Baily, in their valuable works on the subject.

188. When there is only one life the formula becomes

$$r-(1-r)a_m, \qquad \text{or} \quad \frac{1-ia_m}{1+i}.$$

189. By Davies's method—

The present value of the nth year's payment is found by multiplying the present value of £1 due at the end of n years by the fraction which has for its numerator the number who die in the nth year from this time, and for the denominator the number living at the present age. Let us call d_m the number who, according to the tables, die in the mth year of their age; then

$$A_m = \frac{rd_{m+1} + r^2.d_{m+2} + r^3.d_{m+3} + r^4.d_{m+4} + \&c.\ \&c.}{l_m}$$

Multiplying numerator and denominator by r^m :

$$A_m = \frac{r^{m+1}.d_{m+1}+r^{m+2}.d_{m+2}+r^{m+3}.d_{m+3}+\ \&c.+\&c.}{l_m\, r^m}$$

In Tables 11 to 16, the numerator of this fraction is given for every age in column M, and the denominator in column D :

$$\therefore\ A_m = \frac{M_m}{D_m}.$$

190. When columns D and N are given without the column M, the value of the assurance may be found by means of them alone, without previously calculating the value of the annuity, thus:

Art. 187. $A_m = r + ra_m - a_m$, adding and subtracting unity which does not alter the value, it becomes

$$A_m = 1 - 1 + r + ra_m - a_m = 1-(1-r)(1+a_m);$$

and since

$$a_m = \frac{N_m}{D_m},\ \text{therefore}\ A_m = 1-(1-r)\left(1+\frac{N_m}{D_m}\right) = 1-(1-r)\left(\frac{D_m+N_m}{D_m}\right);$$

but by the construction of the tables $D_m + N_m = N_{m-1}$,

$$\therefore\ A_m = 1-(1-r)\,\frac{N_{m-1}}{D_m}.$$

191. To find the annual premium.

The first payment is usually made at the time of effecting the insurance, and the subsequent premiums paid at the end of every year during the term of the assurance; the single premium, which is equivalent to the payment of an annual premium of £1, is evidently

$$1+a_{\overline{(m,\ m_1,\ m_2,\ \&c.)}}^{\,v}\ .$$

The following simple rule of proportion determines the annual premium: "As unity added to the *present value* of £1 per annum on the given life or lives, is to £1, so is the single premium required, to its equivalent annual premium;" or, in other words, divide the single premium required to insure the given sum by the present value of £1 per annum on the given life or lives increased by unity:

$$\frac{1-(1-r)\left(1+a_{\overline{(m,\ m_1,\ m_2,\ \&c.)}}^{\,v}\right)}{1+a_{\overline{(m,\ m_1,\ m_2,\ \&c.)}}^{\,v}} = \frac{1}{1+a_{\overline{(m,\ m_1,\ m_2,\ \&c.)}}^{\,v}} - (1-r),$$

when there is only one life it becomes

$$\frac{1}{1+a_m} - (1-r).$$

By Davies's method

$$\frac{1}{1+a_m} = \frac{1}{1+\dfrac{N_m}{D_m}} = \frac{D_m}{D_m+N_m} = \frac{D_m}{N_{m-1}};$$

the annual premium is therefore $\frac{D_m}{N_{m-1}} - (1-r)$, and since $\frac{M_m}{D_m}$ is the single premium, this quantity divided by $(1+a_m)$ is

$$\frac{M_m}{D_m} \times \frac{1}{1+a_m} = \frac{M_m}{D_m} \times \frac{D_m}{N_{m-1}} = \frac{M_m}{N_{m-1}},$$

which is also the formula.

Rule (1). The single premium is found by adding one to the present value of the annuity on the given life or lives, multiplying the sum by the difference between unity and the present value of £1 due at the end of one year, and subtracting the product from unity.

Or, (2) Multiply the annuity by the annual interest of £1, subtract the product from unity, and divide by the amount of £1 in one year.

By Davies's method:

(3) Divide the number opposite the age in column M by the number opposite the age in column D.

Or, (4) Divide the number in column N opposite the age one year younger than the given life by the number in column D opposite the given age, multiply the quotient by the difference between unity and the present value of £1 due in one year, and subtract the product from unity.

To find the annual premium:

(1) Divide the single premium by the annuity on the given life or ves increased by unity.

Or, (2) Divide unity by the present value of the annuity increased y unity, and from the quotient subtract the difference between unity nd the present value of £1 due in one year.

By Davies's method:

(3) Divide the number opposite the age in column M by the number pposite the age one year younger in column N.

Or, (4) Divide the number opposite the age in column D by that pposite the age one year younger in column N, and from the quotient ubtract the difference between unity and the present value of £1 due n one year.

192. Construction of column M, Carlisle 4 per cent.

$r^{105} = l_{104} . r^{100} . r^5 = 1 \times .01980004 \times .82192711 = .016274190 = M_{104}$

$r^{104} = (l_{103} - l_{104}) r^{100} . r^4 = 2 \times .01980004 \times .85480419 = \underline{.033850312}$

$.050124502 = M_{103}$

$r^{103} = (l_{102} - l_{103}) r^{100} . r^3 = 2 \times .01980004 \times .88899636 = \underline{.035204326}$

$.085328828 = M^{102}$

$r^{102} = (l_{101} - l_{102}) r^{100} . r^2 = 2 \times .01980004 \times .92455621 = \underline{.036612500}$

$.121941328 = M_{101}$

If we wish to obtain the single and annual premium at the age we have

$$\frac{M_m}{D_m} = \frac{M_{101}}{D_{101}} = \frac{.121941}{.133270} = .914998 = \text{single premium},$$

$$\frac{M_m}{N_{m-1}} = \frac{M_{101}}{N_{100}} = \frac{.121941}{.294532} = .414017 = \text{annual premium}.$$

193. The present value of an assurance of £1 on two joint li

$$\Sigma r^n\{p_{(m,\, m_1),\, n-1} - p_{(m,\, m_1),\, n}\} =$$

$$\frac{r(l_m.l_{m_1} - l_{m+1}.l_{m_1+1}) + r^2(l_{m+1}.l_{m_1+1} - l_{m+2}.l_{m_1+2}) + r^3(l_{m+2}.l_{m_1+2} - l_{m+3}.l_{m_1+3}}{l_m.l_{m_1}}$$

$$\frac{r^{m+1}(l_m.l_{m_1} - l_{m+1}.l_{m_1+1}) + r^{m+2}(l_{m+1}.l_{m_1+1} - l_{m+2}.l_{m_1+2}) + r^{m+3}(l_{m+2}.l_{m_1+2} - l_{m-}}{l_m.l_{m_1}.r^m}$$

m being supposed the older age.

Assume $m=85$, and $m_1=80$, the expression by the North Table will become

$$\frac{r^{86}(l_{85}.l_{80} - l_{86}.l_{81}) + r^{87}(l_{86}.l_{81} - l_{87}.l_{82}) + r^{88}(l_{87}.l_{82} - l_{88}.{}_{83}) + .. + r^{97}(l_{91}}{r^{85}.l_{85}.l_{80}}$$

The expression points out a mode of constructing a table joint lives similar to the column M for single lives, since, by find value of $l_m.l_{m_1}$ for every successive combination, and taking t cessive differences between each of these products, we have a mortality for joint lives similar to that for single lives; then mul the decrements at each combination by the present value of £1 the end of as many years as the age of the older, we obtain ments for forming the table the same as in single lives. The f is an illustration, the rate of interest being 3 per cent:—

	Combinations of Living.	Decrements.
$l_{80}.l_{85}=469\times186=$	87234	28364
$l_{81}.l_{86}=406\times145=$	58870	20464
$l_{82}.l_{87}=346\times111=$	38406	14419
$l_{83}.l_{88}=289\times83=$	23987	9479
$l_{84}.l_{89}=234\times62=$	14508	5952
$l_{85}.l_{90}=186\times46=$	8556	3626
$l_{86}.l_{91}=145\times34=$	4930	2266
$l_{87}.l_{92}=111\times24=$	2664	1336
$l_{88}.l_{93}=83\times16=$	1328	770
$l_{89}.l_{94}=62\times9=$	558	374
$l_{90}.l_{95}=46\times4=$	184	150
$l_{91}.l_{96}=34\times1=$	34	34
$l_{92}.l_{97}=$	0	

$$
\begin{array}{rrl}
84\times r^{97}= & 1.9331615 & =M_{96.91} \\
150\times r^{96}= & \underline{8.784513} & \\
 & 10.717674 & =M_{95.90} \\
374\times r^{95}= & \underline{22.559799} & \\
 & 33.277473 & =M_{94.89} \\
770\times r^{94}= & \underline{47.840046} & \\
 & 81.117519 & =M_{93.88} \\
1336\times r^{93}= & \underline{85.49575} & \\
 & 166.61327 & =M_{92.87} \\
2266\times r^{92}= & \underline{149.36031} & \\
 & 315.97358 & =M_{91.86} \\
3626\times r^{91}= & \underline{246.17295} & \\
 & 562.14653 & =M_{90.85} \\
5952\times r^{90}= & \underline{416.21020} & \\
 & 978.35673 & =M_{89.84} \\
9479\times r^{89}= & \underline{682.73085} & \\
 & 1661.08758 & =M_{88.83} \\
14419\times r^{88}= & \underline{1069.6935} & \\
 & 2730.7811 & =M_{87.82} \\
20464\times r^{87}= & \underline{1563.6947} & \\
 & 4294.4758 & =M_{86.81} \\
28364\times r^{86}= & \underline{2232.3698} & \\
 & 6526.8456 & =M_{85.80}
\end{array}
$$

The D and N columns may be constructed as in Art. 131, then from N and M columns may be obtained the columns S and R, Art. 116.

ges.	D	N	S	M	R
5.80	7071.661	11633.796	27374.656	6526.8456	17363.3260
6.81	4633.321	7000.475	15740.860	4294.4758	10836.4804
7.82	2934.678	4065.7974	8740.3846	2730.7811	6542.0046
8.83	1779.5088	2286.2886	4674.5872	1661.08758	3811.2235
9.84	1044.9475	1241.3411	2388.2986	978.35673	2150.1359
0.85	598.3020	643.0391	1146.9575	562.14653	1171.7792
1.86	334.7029	308.3362	503.9184	315.97358	609.6325
2.87	175.5939	132.74237	195.58222	166.61327	293.6591
3.88	84.98378	47.758699	62.839851	81.117519	127.0458
4.89	34.668503	13.090096	15.081252	33.277473	45.92830
.90	11.098940	1.991156	1.991156	10.717674	12.65084
.91	1.991156			1.9331615	1.93316

4. The following example is calculated by *all* the rules in page
to enable any one at a glance to see the application of each par-
r rule:

ample. What *single premium* would be required to secure the
ent of £700 at the end of the year in which the existence of a
n now aged 35 shall fail, Carlisle 4 per cent?

1st Method.

1.000000
$.961538 = \frac{1}{1.04}$
$.038462 = 1 - r$
$2140.71 = a_{35} + 1$ inverted
38462
26923
154
4
1
.65544
1.
$.34456 = A_{35}$
007
241.192

2nd Method.

$16.04123 = a_{35}$
$.04 = i$
.6416492
1.0000000
1.04).3583508).34456
312 007
463 241.192
416
475
416
590
520
708

3rd Method.

$M_{35} = 468.2037$ and $D_{35} = 1358.8137$
1358.8137)468.2037(.34456
4076441 007
605596 241.192
543525
62071
54352
7719
6794
925

4th Method.

$N_{34} = 23155.8543$ $D_{35} = 1358.8137$
1358.8137)23155.8543 (17.0412
13588137
9567.7173
95116959
560214
543525
16689
13588
8101

$(1 - 1.04^{-1}) = .038462$
2140.71
38462
26923
154
4
1
.65544
.34456
700
241.192
= £241 3 1

What *annual premium* would be required to secure the same?

1st method,

$$\frac{A_{25}}{1+a_{25}}$$

```
a25+1= 17.0412)241.192(14.153
         ....   170412
                 70780
                 68165
                  2615
                  1704
                   911
                   852
                    59
```

2nd method,

```
17.0412) 1.000000  (.058681
   ...    852060    .038462 = 1 - r
          147940    .020219
          136330        700
           11610    14.153
           10225
            1385
            1363
              22
```

3rd method,

Table 13, $M_{25} = 468.2037 \quad N_{24} = 23155.8543$

```
23155.85 )468.2037 ( .020219
   . ..   4631170         700
           50867       14.153
           46311
            4556
            2316
            2240
```

4th method,

Table 13, $\frac{D_m}{N_{m-1}} - (1-r) = \frac{D_{25}}{N_{24}} - (1 - 1.04^{-1}) =$

$\frac{1358.8137}{23155.85} - .038462 = .058681 - 038462 = .020219$

then $.020219 \times 700 = £14.153 = £14 \ 3 \ 1.$

195. It sometimes happens that persons effecting an insurance for the whole term of life, wish to pay a *limited* number of annual premiums; the formula for finding what the premium should be (according to what has been said in Art. 140), is evidently

$$\frac{A_{\overset{\bullet}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}}}{1+a_{\overset{\bullet}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}\ \overline{n-1|}}}$$

n denoting the number of premiums to be paid, the first being paid at the time of effecting the insurance, and the remaining $n-1$ at the end of each year for $n-1$ years.

When there is only one life we have

$$\frac{A_m}{1+a_{(m)\overline{n-1|}}}=\frac{\mathrm{M}_m}{\mathrm{D}_m}\div\frac{\mathrm{N}_{m-1}-\mathrm{N}_{m+n-1}}{\mathrm{D}_m}=\frac{\mathrm{M}_m}{\mathrm{N}_{m-1}-\mathrm{N}_{m+n-1}}.$$

Rule. Divide the single premium by unity added to the present value of a temporary annuity for one year less than the number of premiums which are to be paid.

Example. Suppose the insurance in the last example was to be secured by payment of 7 annual premiums, of which the first is paid at the time of effecting the insurance, what should be the amount of each premium?

$$\frac{241.192}{1+a_{(35)\overline{6|}}}=\frac{241.192}{1+\left(a_{35}-\frac{l_{41}}{l_{35}}.r^6.a_{41}\right)}=\text{(Tables 1 and 18.)}$$

$$\frac{241.192}{(1+16.0412)-\frac{5009}{5362}\times .790315\times 14.8831}=$$

$$\frac{241.192}{17.0412-10.9880}=\frac{241.192}{6.0532}=£39.845=£39\ 16\ 11.$$

also $\frac{\mathrm{M}_{35}}{\mathrm{N}_{34}-\mathrm{N}_{41}}=\frac{468.203}{23155.85-14930.64}\times 700=.056922\times 700=39.845.$

What single and annual premiums would be required to secure £250 on the death of the survivor of two lives aged 36 and 41, Northampton 3 per cent?

$$\frac{1-i\,(a_{36}+a_{41}-a_{36.41})}{1+i}$$

$$\begin{array}{rrrl}
a_{36} & =15.7288 & & \\
a_{41} & =14.6196 & & \\
\hline
 & 30.3484 & & \\
a_{36.41} & =11.0213 & & \\
\hline
 & 19.3271 & & \\
 & .03 & & \\
\hline
 & .579813 & & \\
1.03 &).420187\ (& .40795 & \\
 & 412 & 052 & \\
\hline
 & 818 & 81590 & \\
 & 721 & 20398 & \\
\hline
 & 977 & 101.988 & £101\ 19\ 9 \text{ single premium.} \\
 & 927 & & \\
\hline
 & 50 & &
\end{array}$$

$1+a_{26}+a_{41}-a_{26.41}=20.3271)101.988(5.017=$ £5 0 4 annual prem.
1016355
3525
2033
1492

196. If at the time of effecting the insurance, a certain sum should be paid with a view of diminishing the annual premiums to be paid during the term of life, this sum subtracted from the *single* premium that would be required, is the amount for which an equivalent annual premium is to be paid; and as the first annual premium in this case is paid at the end of the year, we must divide the amount by the annuity on the life or lives.

A person aged 26 wishes to effect an insurance of £500 payable at his decease, by paying an immediate sum of £100, and afterwards an annual premium during his life. What must be the amount of that premium, Carlisle 4 per cent?

$.289005=A_{26}$
005
144.5025
100.
17.4859) 44.5025 (2.545=£2 10 11
349718
95307
87430
7877
6994
883

TEMPORARY ASSURANCES.

197. To find the single premium to secure a sum payable at the end of the year in which the given life or joint lives shall fail, provided that event happen within t years.

The value of the expectation of receiving the sum at the end of the nth year is $r^n(p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, n-1}-p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, n})$

$$\therefore A_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\rceil t} = \Sigma_{t\rceil} r^n \left(p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, n-1} - p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, n}\right),$$

in which we have

$$\Sigma_{t\rceil} r^n . p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, n-1} = r + r^2 . p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, 1} + r^3 p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}, 2} + \ldots$$

$$+r^t p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ t-1} =$$

$$r\left\{1+r\,p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ 1} + r^2\,p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ 2} + \ldots + r^{t-1}.p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ t-1}\right.$$

$$r\left\{1+a_{\overset{v}{\overline{(m,\ m_1,\ m_2\ \&c.)}}_{\overline{t-1|}}}\right\};$$

and $$\sum_{t|} r^n.p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ n} = a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{t|}}$$

$$\therefore A_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{t|}} = r\left\{1+a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{\overline{t-1|}}}\right\} - a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{t|}},$$

and since the value of an annuity for $t-1$ years is the same as value of an annuity for t years, diminished by the value of the tth p ment, which in this case is $r^t.\,p_{\overset{v}{\overline{(m,\ m_1,\ m2,\ \&c.)}},\ t}$, we obtain

$$\therefore A_{\overset{v}{\overline{(m, m_1,\ m_2,\ \&c.)}}_{t|}} = r\left\{1-r^t.p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}.\ t} + a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{t|}}\right\} - a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}}$$

$$r\{1-r^t.p_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}},\ t}\}-(1-r)\,a_{\overset{v}{\overline{(m,\ m_1,\ m_2,\ \&c.)}}_{t|}};$$

when there is only one life this formula becomes

$$A_{(m)_{t|}} = r\left\{1+a_{(m)_{\overline{t-1|}}}\right\} - a_{(m)_{t|}} = r\{1-r^t p_{m,\,t}\}-(1-r)\,a_{(m)_{t|}}.$$

198. By Davies's method—

The single premium for a temporary assurance is found by su ming the first t terms in the numerator of Art. 189, and dividing th by the denominator $l_m.r^m$. The sum of the first t terms is (from construction of column M) evidently equal to the difference between number in column M opposite the present age of the life and number in the same column opposite the age t years older :

$$\therefore A_{(m)_{t|}} = \frac{M_m - M_{m+t}}{D_m}.$$

199. When columns D and N only are given, the value may found without previously calculating the value ot the annuity, thus:

$$A_{(m)_{t|}} = r\,(1+a_{(m)_{\overline{t-1|}}}) - a_{(m)_{t|}},$$

in which

$$1+a_{(m)_{\overline{t-1|}}} = \frac{N_{m-1}-N_{m+t-1}}{D_m} \text{ (Art. 139)};$$

and $$a_{(m)_{t|}} = \frac{N_m - N_{m+t|}}{D_m},$$

$$\therefore A_{(m)_{t|}} = \frac{r(N_{m-1}-N_{m+t-1}) - (N_m - N_{m+t})}{D_m}.$$

200. To find the annual premium.

The number of annual payments will be t, consisting of an immediate payment and of a temporary annuity for $t-1$ years; the single premium must therefore be divided by

$$1+a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t-1|}}=1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}+a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}\ .$$

Art. 197. $A_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}=r\{1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}\}-(1-r)a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}$,

adding and subtracting $1-r^t.p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}$, we have

$$1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}-(1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t})+r(1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t})$$

$$-(1-r)a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}=$$

$$1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}-(1-r)(1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t})-(1-r)a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}=$$

$$1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}-(1-r)\left\{1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}+a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}\right\},$$

which divided by the quantity

$$1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}+a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}\ ,$$

gives for the annual premium

$$\frac{1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}}{1-r^t p_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}},t}+a_{\overset{v}{\overline{(m, m_1, m_2, \&c.)}}\,\overline{t|}}}-(1-r);$$

when there is only one life it becomes

$$\frac{1-r^t.p_{m,t}}{1-r^t p_{m,t}+a_{(m)\,\overline{t|}}}-(1-r)=\frac{1-r^t.\dfrac{l_{m+t}}{l_m}}{1-r^t.\dfrac{l_{m+t}}{l_m}+a_m-a_{m+t}.r^t.\dfrac{l_{m+t}}{l_m}}-(1-r).$$

By Davies's method—

The divisor $1+a_{(m)\,\overline{t-1|}}=\dfrac{N_{m-1}-N_{m+t-1}}{D_m}$. (Art. 139); the formula for the annual premium is therefore (Art. 198)

$$\frac{M_m-M_{m+t}}{D_m}\times\frac{D_m}{N_{m-1}-N_{m+t-1}}=\frac{M_m-M_{m+t}}{N_{m-1}-N_{m+t-1}};$$

or, (Art. 199)

$$\frac{r(N_{m-1}-N_{m+t-1})-(N_m-N_{m+t})}{D_m}\times\frac{D_m}{N_{m-1}-N_{m+t-1}}=r-\frac{N_m-N_{m+t}}{N_{m-1}-N_{m+t-1}}.$$

201. ***Rule.*** To find the single premium.

Multiply the present value of £1, due at the end of the given period

of insurance, by the chance of the given life or lives surviving
then multiply the difference between the product thus found a
by the present value of £1 due at the end of one year; from t
subtract the product obtained by multiplying the present value
porary annuity for the same term as the assurance by the
between unity and the present value of £1 due at the end of

By Davies's method—

(2) From the number opposite the given age in column M
the number in the same column opposite the age as many y
as the insurance has to continue, and divide the difference by
ber in column D opposite the age of the party at the present ti

Or thus (3): From the number in column N opposite th
year younger than the given life, subtract the number in
column opposite the age one year younger than the life will
expiration of the term of the insurance; multiply the differen
present value of £1 due at the end of one year; from this pro
tract the difference between the number in column N opp
present age and the number in the same column opposite th
age increased by the number of years the insurance is to cont
divide by the number in column D opposite the present age.

202. To find the annual premium.

Rule. When the single premium is known, add unity to th
value of an annuity for the term of the assurance diminishe
present value of the last payment of this annuity, and divide t
premium by the result.

When the single premium is not known divide by the sa
the difference between unity and the present value of £1 to be
at the expiration of the term of the assurance, provided the
or lives survive that term, and from the quotient subtract the
between unity and the present value of £1 due at the end of a

By Davies's method—

203. From the number in column M opposite the present
tract the number in the same column opposite the age increase
number of years for which the insurance is effected, and d
result by the difference between the number in column N op
age one year younger than the present, and the number in
column opposite the present age increased by one less than the
of years for which the insurance is made; or,

204. Find the difference between the number in column
site the present age and the number in the same column op
age increased by the number of years for which the insurance is
and divide this quantity by the difference between the numbe
same column opposite ages respectively one year less than t
and subtract the quotient from the present value of £1 due a
of one year.

Example. What is the single premium required to insure £400 payable at the end of the year in which the existence of a life aged 48 shall fail, provided that event take place within the next 7 years? (Carlisle 4 per cent.)

$$r(1-r^7p_{48.7})-(1-r)a_{(48)\overline{7|}} \qquad a_{(48)\overline{7|}}=a_{48}-\frac{l_{55}}{l_{48}}r^7a_{55}$$

$$\log r^7p_{48.7}=\log\left(r^7\times\frac{l_{55}}{l_{48}}\right)$$

$$\begin{array}{rrl}
\log l_{55}= & \log 4073 = & 3.6099144 \\
\text{ar. co.}\log l_{48}= & \text{ar. co.}\log 4521 = & \bar{4}.3447655 \\
\log r^7\,(\text{Table 8. Part 1.})= & & \bar{1}.8807666 \\
\hline
 & & \bar{1}.8354465 \qquad .68462=r^7p_{48.7} \\
\log a_{55}= & \log\ 11.2996= & 1.0530633 \\
\hline
 & & 0.8885098 \qquad 7.7359=a_{(48)\overline{7|}}
\end{array}$$

$$\begin{array}{r}
13.4191=a_{48} \\
\hline
5.6832=a_{(48)\overline{7|}}
\end{array}$$

$$\begin{array}{r}
1-r=1.-.961538=.038462 \\
2386.5 \\
\hline
192310 \\
23077 \\
3077 \\
115 \\
8 \\
\hline
.218587
\end{array}$$

$$\begin{array}{rl}
1. & \\
.68462 & \\
\hline
.31538 & =1-r^7p_{48.7} \\
835169. & =r\ \text{inverted} \\
\hline
283842 & \\
18923 & \\
315 & \\
158 & \\
9 & \\
2 & \\
\hline
.303249 & \\
.218587 & \\
\hline
.084662 & \\
400 & \\
\hline
33.8648 & =\text{£}33\ 17\ 3.
\end{array}$$

2nd Method—

$$\frac{-M_{55}}{D_{48}}\times 400=\frac{306.4795-248.2218}{688.0725}\times 400=.08466\times 400=33.864$$

$$=\text{£}33\ 17\ 3$$

3rd Method—

$$\frac{1.04^{-1}(N_{47}-N_{54})-(N_{48}-N_{55})}{D_{48}}\times 400=\frac{.961538(9921.410-5793.91}{688.073}$$

$$\frac{-(9233.338-5322.850)}{688.073}\times 400=\frac{.961538\times 4127.496-3910.488}{688.073}\times 40$$

$$=\frac{3968.745-3910.488}{688.073}\times 400=\frac{58.257}{688.073}\times 400=$$

$$£33.864=£33\ 17\ 3.$$

(2) What is the present value of an insurance of £400 on a life aged 38, for the term of 7 years, Carlisle 4 per cent?

$$r(1-r^7 p_{38.7})-(1-r)a_{(38)\overline{7|}} \qquad a_{(38)\overline{7|}}=a_{38}-r^7\frac{l_{45}}{l_{38}}a_{45}$$

$\log . l_{45}=$ $\log 4727$ $=3.6745856$
ar. co. $\log l_{38}=$ ar. co. $\log 5194$ $=\bar{4}.2844981$
$\log r^7$ (Table 8. Part 1.) $=\bar{1}.8807666$
$\bar{1}.8398503$ $.691593=r^7 p_{38,7}$
$\log a_{45}=$ $\log 14.1046=1.1493608$
0.9892111 $9.7546=a_{(38)\overline{17|}}$
$15.4713=a_{38}$
$5.7167=a_{(38)\overline{7|}}$

$r(1-r^7 p_{38,7})=.961538(1-.691593)=.961538\times .308407$
$=.296544$
$(1-r)a_{(38)\overline{7|}}=(1-.961538)\ 5.7167=$
$.038462\times 5.7167=$ $.219875$
$.296544-.219875=$ $.076669$
400
$30.6676=£30\ 13\ 4.$

(3) What is the present value of an insurance of £400 payable at th end of the year in which the joint existence of two lives aged 38 and 4 shall fail, provided that event happen within the next 7 years? (Car lisle 4 per cent.)

$$r(1-r^7 p_{(38.48),7})-(1-r)\,a_{(38.48)\overline{7|}} \qquad a_{(38.48)\overline{7|}}=a_{38.48}-\frac{l_{45}.l_{55}}{l_{38}.l_{48}}r^7 a_{45.55}$$

$\log . l_{55}=$ $\log 4073$ $=3.6099144$
$\log . l_{45}=$ $\log 4727$ $=3.6745856$
ar.co. $\log l_{48}=$ ar.co. $\log 4521=\bar{4}.3447655$
ar.co. $\log l_{38}=$ ar.co. $\log 5194=\bar{4}.2844981$
$\log r^7$ (Table 8. Part 1.) $=\bar{1}.8807666$
$\bar{1}.7945302$ $.623061$
$\log a_{45,55}=$ $\log 9.583=0.9815015$ Milne, Table 22.
0.7760317 $5.9708=a_{(38.48)\overline{17|}}$
$a_{38.48}=11.3880$ Milne, Table 2
$5.4172=a_{(38.48)\overline{7|}}$.

$$\begin{aligned}
&r(1-r^7p_{(38.48),7}) = .961538(1.-.623061) = .362440\\
&(1-r)a_{(38.48)\overline{7}|} = .038462 \times 5.4172 = \underline{.208357}\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad .154083\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad \underline{400}\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad 61.6332 = £61\ 12\ 8.
\end{aligned}$$

(4) What is the present value of an insurance of £400 payable on the death of the survivor of two lives aged 38 and 48, provided that event take place within the next 7 years? (Carlisle 4 per cent.)

$$\begin{array}{llll}
\text{By Example 2,} & r^7p_{38,7} = .69159 & a_{38\overline{7}|} & = 5.7167\\
\quad\text{,,}\quad 1, & r^7p_{48,7} = \underline{.68462} & a_{48\overline{7}|} & = \underline{5.6832}\\
 & \qquad\quad 1.37621 & & \,11.3999\\
\quad\text{,,}\quad 3, & r^7p_{(38.48),7} = \underline{.62306} & a_{(38.48)\overline{7}|} & = \underline{5.4172}\\
 & \qquad\quad .75315 & & \,5.9827\\
 & 1-.75315 = .24685 & &
\end{array}$$

$$\begin{aligned}
&r\{1-r^7(p_{38.7}+p_{48.7}-p_{(38,48),7})\} = .961538\times .24685 = .237355\\
&(1-r)(a_{(38)\overline{7}|}+a_{(48)\overline{7}|}-a_{(38,48)\overline{7}|}) = .038462\times 5.9827 = \underline{.230107}\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad .007248\\
&\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad \underline{400}
\end{aligned}$$

Answer £2 17 0. $\quad 2.8992$

(5.) What annual premium would be required for the insurance in 1st example?

$$\frac{33.8648}{1-r^7p_{48,7}+a_{(48)\overline{7}|}} = \frac{33.8648}{1-.68462+5.6832} = \frac{33.8648}{5.9986} = 5.646 = £5\ 12\ 11$$

or thus:—

$$\left[\frac{1-r^7p_{48.7}}{1-r^7p_{48.7}+a_{(48)\overline{7}|}}-(1-r)\right]\times 400 =$$

$$\left(\frac{1.-.68462}{5.9986}-.038462\right)\times 400 = .014115\times 400 = 5.646 = £5\ 12\ 11$$

2nd Rule.

$$\frac{M_{48}-M_{55}}{N_{47}-N_{54}}\times 400 = \frac{306.4795-248.2218}{9921.4104-5793.9145}\times 400 = .014115\times 400 =$$
$$5.646 = £5\ 12\ 11.$$

3rd Rule.

$$400\times\left(r-\frac{N_{48}-N_{55}}{N_{47}-N_{54}}\right) = 400\times\left(.961538-\frac{9233.338-5322.850}{9921.410-5793.915}\right)$$
$$= 400.(.961538-.947423) = 400\times .014115 = £5.646.$$

The annual premium for the insurance in the fourth exampie would be

$$\left[\frac{1-r^7(p_{38.7}+p_{48.7}-p_{(38.48),7})}{1-r^7(p_{38.7}+p_{48.7}-p_{(38.48),7})+a_{(38)\overline{7}|}+a_{(48)\overline{7}|}-a_{(38.48)\overline{7}|}}-(1-r)\right]\times 400 =$$

$$400\times\left(\frac{.24685}{.24685+5.9827}-.03846\right) = \frac{.24685}{6.22955}-.03846 =$$
$$(.03962-.03846)\times 400 = .00116\times 400 = £.464 = £0\ 9\ 3.$$

DEFERRED ASSURANCES.

205. To find the value of a deferred assurance.

The present value of an assurance for the first t years added to the present value of an assurance deferred t years, is evidently equal to the value of an assurance to be entered upon immediately for the whole term of life; it therefore follows that the value of the assurance of a sum to be received at the end of the year in which the life or lives shall fail, provided that event take place after t years, is equal to the difference between the value of the assurance of that sum for the whole term of life, and of the assurance for the first t years only.

$$\text{Art. 187, } A_{\overline{(m, m_1, m_2, \&c.)}^{\,v}} = r - (1-r) a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}} \;.$$

$$\text{Art. 197, } A_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{t\rceil}} = r - r^{t+1} p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} - (1-r) a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{t\rceil}}$$

the difference gives

$$A_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{\rceil t}} = r^{t+1} p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} - (1-r)\left(a_{\overline{(m, m_1, m_2, \&c)}^{\,v}} - a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{t\rceil}}\right);$$

but $a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}} - a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{t\rceil}} = a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{\rceil t}}$ the value of an annuity deferred t years,

$$\therefore A_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{\rceil t}} = r^{t+1} p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} - (1-r)\, a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{\rceil t}} =$$

$$r^{t+1} p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} - (1-r) . r^t . p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} . a_{\overline{(m+t, m_1+t, m_2+t, \&c.)}^{\,v}} =$$

$$r^t p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t} \left\{ r - (1-r)\, a_{\overline{(m+t, m_1+t, m_2+t, \&c.)}^{\,v}} \right\} =$$

$$r^t . p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}, t}\, A_{\overline{(m+t, m_1+t, m_2+t, \&c.)}^{\,v}} . \quad \text{Art. 187.}$$

206. The annual premium is found (if t premiums only be payable) by dividing the single premium by

$$1 - p_{\overline{(m, m_1, m_2, \&c.)}^{\,v}\, t}\, r^t + a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}{}_{t\rceil}} ,$$

or by $1 + a_{\overline{(m, m_1, m_2, \&c.)}^{\,v}}$, if premium continue till the claim.

207. By Davies's method the formula for the single premium is evidently $\frac{M_{m+t}}{D_m}$, being the difference between the assurance for the whole term of life, and for the first t years only; and according to Art. 139, the annual premium is

$$\frac{M_{m+t}}{D_m} \times \frac{D_m}{N_{m-1} - N_{m+t-1}} = \frac{M_{m+t}}{N_{m-1} - N_{m+t-1}} ;$$

if the annual premium be payable until the time of claim, the formula will be

$$\frac{M_{m+t}}{D_m} \times \frac{1}{1+a_m} = \frac{M_{m+t}}{D_m} \times \frac{1}{1+\frac{N_m}{D_m}} = \frac{M_{m+t}}{D_m + N_m} = \frac{M_{m+t}}{N_{m-1}} .$$

To find the single premium.

208. (1) Multiply the present value of £1 due at the end of one more than the number of years for which the insurance is deferred, by the chance of the life or lives surviving the number of years deferred, and subtract from this the product found by multiplying the value of a deferred annuity for the same term, by the difference between unity and the present value of £1 due at the end of a year.

209. (2) Divide the number in column M opposite the age the life will attain when the assurance commences, by the number in column D opposite the present age.

210. (3) Find the value of an assurance for the whole period of existence on lives as many years older than the given lives as the assurance is deferred, multiply it by the present value of £1 due the number of years deferred and by the probability of the lives surviving that period.

211. To find the annual premium.

When the premium is payable only during the term the assurance is deferred, the divisor is the same as for a temporary assurance; but if the premium be payable during the whole term of life, the divisor is the value of the annuity on the life increased by unity.

212. By Davies's Tables.

When the premium is payable during the term of deferment, divide the number in column M opposite the present age increased by the number of years deferred, by the difference between the number in column N opposite the age one year younger than the present, and the number in the same column opposite the present age increased by one less than the number of years the insurance is deferred.

When the premium is payable during the whole term of life, divide the same quantity by the number in column N opposite the age one year younger than the present.

Example. What single and annual premium should be paid to secure the payment of £400 on the death of a person aged 48, provided that event take place after the expiration of 7 years? (Carlisle 4 per cent.)

$$r^{t+1}p_{m,t}-(1-r)a_{(m)\rceil t}=r^{8}p_{48.7}-(1-r)a_{(48)\rceil 7},$$

$r^{8}p_{48.7}=r\times r^{7}p_{48.7}=.961538\times .68462=.658288$ See Ex. 1. Temp. Ass^{ces}.

$(1-r)a_{(48)\rceil 7}=.038462\times 7.7359=.297537$ do.

$$\begin{array}{r} .360751 \\ 400 \\ \hline 144.3004 \end{array} =£144\ 6\ 0$$

or thus: $r^{7}.\frac{l_{55}}{l_{48}}\ A_{55}\times 400=\frac{.759918\times 4073\times .526938}{4521}\times 400$

$=.36075\times 400=144.300.$

To find the annual premium payable until the assurance commences.

$$\frac{144.3000}{1-r^{7}p_{48.7}+a_{(48)\rceil 7}}=\frac{144.300}{5.9986}=24.056=£24\ 1.\ 1.$$ (Ex. 5, page 169.)

To find the annual premium payable during the whole term of life.

$$\frac{144.3}{1+a_{48}}=\frac{144.3}{14.4191}=10.008=£10\ \ 0\ \ 2.$$

By Davies's method—

$$\frac{M_{m+t}}{D_m}=\frac{M_{55}}{D_{48}}=\frac{248.22176}{688.0725}$$

$$\frac{248.22176}{688.0725}\times 400=\frac{99288.704}{688.0725}=144.300=£144\ \ 6\ \ 0 \text{ single prem.}$$

To find the annual premium.

$$\frac{M_{m+t}}{N_{m-1}-N_{m+t-1}}\times 400=\frac{M_{55}}{N_{47}-N_{54}}\times 400=\frac{248.22176}{9921.4104-5793.9145}\times 400$$

$$=\frac{99288.704}{4127.4959}=£24.056=£24\ \ 1\ \ 1,$$ the annual premium payable during the term the assurance is deferred.

$$\frac{M_{m+t}}{N_{m-1}}\times 400=\frac{M_{55}}{N_{47}}\times 400=\frac{99288.704}{9921.4104}=£10.008=£10\ \ 0\ \ 2=$$

the annual premium payable during the whole term of life.

SURVIVORSHIP ASSURANCES.

213. To determine the present value of £1 to be received at the end of the year wherein a life aged m may fail, provided that life be survived by another aged m_1.

By Art. 178, the probability of this event happening in the nth year is

$$\tfrac{1}{2}(p_{m,n-1}-p_{m,n})(p_{m_1,n-1}+p_{m_1,n})=\tfrac{1}{2}(p_{(m,m_1),n-1}-p_{(m,m_1),n}-p_{m,n}\times p_{m_1,n-1}$$
$$+p_{m,n-1}\times p_{m_1,n}),$$

and

$$\tfrac{1}{2}\Sigma r^n(p_{(m,m_1),n-1}-p_{(m,m_1),n}-p_{m,n}\times p_{m_1,n-1}+p_{m,n-1}\times p_{m_1,n})$$

is the present value of the assurance.

By Art. 187, $\Sigma r^n(p_{(m,m_1),n-1}-p_{(m,m_1),n})$ is the present value of an assurance payable on the failure of the joint existence of the lives (A_{m,m_1}), and

$$\Sigma r^n.p_{m,n}\times p_{m_1,n-1}=\frac{l_{m+1}.l_{m_1}r}{l_m.l_{m_1}}+\frac{l_{m+2}.l_{m_1+1}r^2}{l_m.l_{m_1}}+\frac{l_{m+3}.l_{m_1+2}r^3}{l_m.l_{m_1}}+\text{\&c.}$$

$$=\frac{l_{m+1}.l_{m_1}r}{l_m.l_{m_1}}\left(1+\frac{l_{m+2}.l_{m_1+1}r}{l_{m+1}.l_{m_1}}+\frac{l_{m+3}.l_{m_1+2}r^2}{l_{m+1}.l_{m_1}}+\frac{l_{m+4}.l_{m_1+3}r^2}{l_{m+1}.l_{m_1}}.+\text{\&c.}\right)$$

and since

$$\left(\frac{l_{m+2}.l_{m_1+1}r}{l_{m+1}.l_{m_1}}+\frac{l_{m+3}.l_{m_1+2}r^2}{l_{m+1}.l_{m_1}}+\frac{l_{m+4}.l_{m_1+3}r^3}{l_{m+1}.l_{m_1}}+\text{\&c.}\right)=a_{m+1,m_1}$$

and $$\frac{l_{m+1}.l_{m_1}r}{l_m.l_{m_1}}=\frac{l_{m+1}r}{l_m},$$ we have

$$\Sigma r^n.p_{m,n}\times p_{m_1,n-1}=\frac{l_{m+1}}{l_m}r(1+a_{m+1,m_1});$$

also

$$\Sigma r^n p_{m,n-1} \times p_{m_1,n} = \frac{l_m \cdot l_{m_1+1}}{l_m \cdot l_{m_1}} r + \frac{l_{m+1} \cdot l_{m_1+2}}{l_m \cdot l_{m_1}} r^2 + \frac{l_{m+2} \cdot l_{m_1+3}}{l_m \cdot l_{m_1}} r^3 + \text{\&c.}$$

$$= \frac{l_{m-1}}{l_m}\left(\frac{l_m \cdot l_{m_1+1}}{l_{m-1} \cdot l_{m_1}} r + \frac{l_{m+1} \cdot l_{m_1+2}}{l_{m-1} \cdot l_{m_1}} r^2 + \frac{l_{m+2} \cdot l_{m_1+3}}{l_{m-1} \cdot l_{m_1}} r^3 + \text{\&c.}\right) = \frac{l_{m-1}}{l_m} \times a_{m-1,m_1} \;;$$

if the present value of the insurance required be denoted by $A_{\underset{(1)}{m},m_1}$, we have $A_{\underset{(1)}{m},m_1} = \frac{1}{2}\left(A_{m,m_1} - \frac{l_{m+1}}{l_m} r(1 + a_{m+1,m_1}) + \frac{l_{m-1}}{l_m} \times a_{m-1,m_1}\right)$.

214. This is the formula given by Mr. Baily in his treatise on Life Annuities: Mr. Milne's formula is

$$\frac{1}{2}\left(A_{m,m_1} + \frac{a_{m-1,m_1}}{p_{m-1,1}} - \frac{a_{m,m_1-1}}{p_{m_1-1,1}}\right)^*,$$

which is more convenient than the other when we have tables showing he probability of a single life at every age living one year, and the eciprocal thereof, as in Table 5.

215. As the failure of either of the lives will determine the event, the divisor for the annual premium must be $1+a_{m,m_1}$.

Example. What is the present value of an assurance of £500 payable on the death of a person aged 60, provided that event take place before the death of another aged 37? (Northampton, 3 per cent.)

$$\frac{1}{2}\left(A_{m,m_1} - \frac{l_{m+1}}{l_m} r(1+a_{m+1,m_1}) + \frac{l_{m-1}}{l_m} \times a_{m-1,m_1}\right) =$$

$$\frac{1}{2}\left(A_{60.37} - \frac{l_{61}}{l_{60}} \times \frac{1+a_{61.37}}{1.03} + \frac{l_{59}}{l_{60}} a_{59.37}\right) =$$

$$\frac{1}{2}\left[A_{60.37} - \left(\frac{l_{61}(1+a_{61.37})}{1.03} - l_{59} \cdot a_{59.37}\right)\frac{1}{l_{60}}\right]$$

$$A_{60.37} = \frac{1 - i\,a_{60.37}}{1+i} = \frac{1 - .03 \times 8.1539}{1.03} = \frac{.755383}{1.03} = .73338$$

$$\left(\frac{l_{61}(1+a_{(61.37)})}{1.03} - l_{59} \cdot a_{(59.37)}\right)\frac{1}{l_{60}} = \left(\frac{1956 \times 8.9619}{1.03} - 2120 \times 8.3407\right)\frac{1}{2038} =$$

---

* This formula is of the same value as the other; for $p_{m,n} \times p_{m_1,n-1} = \frac{l_{m+n}}{l_m} \times \frac{l_{m_1+n-1}}{l_{m_1}} = \frac{l_{m+n} \times l_{m_1+n-1}}{l_m \cdot l_{m_1-1}} \times \frac{l_{m_1-1}}{l_{m_1}} = \frac{p_{(m,m_1-1),n}}{p_{m_1-1,1}}$, and $\Sigma r^n \left(\frac{p_{(m,m_1-1),n}}{p_{m_1-1,1}}\right) = \frac{a_{m,m_1-1}}{p_{m_1-1,1}}$; and in the same way it may be shown that $\Sigma r^n p_{m,n-1} \times p_{m_1,n} = \frac{a_{m-1,m_1}}{p_{m-1,1}}$. When the assurance is for t years only, the pression will be $\frac{1}{2}\left\{A_{(m,m_1)_{\overline{t|}}} + \frac{a_{(m-1,m_1)_{\overline{t|}}}}{p_{m-1,1}} - \frac{a_{(m,m_1-1)_{\overline{t|}}}}{p_{m_1-1,1}}\right\}$.

$$(17018.909-17682.284)\frac{1}{2038}=\frac{-663.375}{2038}=-.32550$$

$$\tfrac{1}{2}(.73338+.32550)\times 500=£264.720=£264\ \ 14\ \ 5.$$

By the 2nd formula—

$$\frac{1}{2}\left[A_{m,\,m_1}+\frac{a_{(m-1,\,m_1)}}{p_{m-1,\,1}}-\frac{a_{(m,\,m_1-1)}}{p_{m_1-1,\,1}}\right]=\frac{1}{2}\left(A_{60.37}+\frac{a_{59.37}}{p_{59.1}}-\frac{a_{60.36}}{p_{36.1}}\right)$$

$$\frac{1}{2}\left[1-(1-r)(1+a_{37.60})+a_{59.37}\frac{l_{59}}{l_{60}}-a_{60.36}\cdot\frac{l_{36}}{l_{37}}\right]$$

$$1-(1-r)(1+a_{37.60})=1-.0291262\times 9.1539=1-.26662=.73338$$

$$a_{37.59}\times\frac{l_{59}}{l_{60}}=8.3407\times\frac{2120}{2038}=\qquad 8.67633$$

$$9.40971$$

$$a_{60.36}\times\frac{l_{36}}{l_{37}}=8.1917\times\frac{3935}{3860}=\qquad 8.35083$$

$$2)\underline{1.05888}$$

$$.52944$$

$$500$$

$$264.720$$

$$=£264\ \ 14$$

$$\frac{264.720}{1+a_{37.60}}=\frac{264.720}{9.1539}=£28.919=£28\ \ 18\ \ 5,$$ the annual premi

216. The value $\underset{(2)}{A_{m,\,m_1}}$ of an assurance payable on the failure o life aged m, provided he die after another life aged m_1 is $A_m-\underset{(1)}{A_{m,\,m_1}}$

For if there be two separate insurances, one to secure the paym of the sum in the event of his dying first of the two, and the othe the event of his dying second, the two together are evidently equa an insurance on the single life :

$$\underset{(1)}{A_{m,\,m_1}}+\underset{(2)}{A_{m,\,m_1}}=A_m;\quad\text{by transposition,}\quad \underset{(2)}{A'_{m,\,m_1}}=A_m-\underset{(1)}{A_{m,\,m_1}}.$$

If the annual premium be payable until the risk is determined, w will be on the failure of the joint existence, the divisor is $1+a_{m,\,m_1}$; if it be payable until the failure of the life aged m, the divisor will $1+a_m$.

Example 2. Let the single and annual premium be required secure the sum stated in the last example on the death of the one 60, provided he die after the other aged 37? (Northampton, 3 cent.)

$$A_{60}=1-(1-r)(1+a_{60})=1.-.029126\times 10.7774=.68610$$

By the last Example $\underset{(1)}{A_{60.37}}=.52944$

$$.15666$$

$$500$$

$$78.330=£78$$

$\frac{78.330}{1+a_{37.60}}=\frac{78.330}{9.1539}=$ £8.557=£8 11 2, annual premium payable until the risk is determined by the failure of one or other of the lives.

$\frac{78.330}{1+a_{60}}=\frac{78.330}{10.7774}=$ £7.268 = £7 5 4, annual premium payable until the failure of the existence of the life assured.

217. Having the present value, provided the life aged m die before the other aged m_1, we may easily obtain the present value of a sum payable on the death of the one aged m_1, provided he die before the other aged m; for the two risks together are evidently equal to an insurance payable on the failure of their joint existence.

$$A_{\underset{(1)}{m},\,m_1}+A_{m,\,\underset{(1)}{m_1}}=A_{m,\,m_1},\quad \text{by transposition,}\quad A_{m,\,\underset{(1)}{m_1}}=A_{m,\,m_1}-A_{\underset{(1)}{m},\,m_1}.$$

What single and annual premium should be paid to secure the payment of £500 on the death of a person aged 37, provided that happen before the death of another aged 60? (Northampton, 3 per cent.)

$$\begin{array}{rl} A_{37.60} = & .73338 \text{ see Example 1, page 173.} \\ A_{\underset{(1)}{60}.37} = & \underline{.52944} \quad \text{do.} \\ & .20394 \\ & \underline{500} \\ & 101.970 = £101\ 19\ 5, \text{ single premium.} \end{array}$$

218. Where there are more than two lives, the number of cases of contingent assurances that may happen is very great: the limits of this work will not admit of such cases being investigated here, and even when the proper formula is given for any case, the want of tables of annuities on three or more lives is an obstacle to finding a very correct value. For a variety of cases in three lives, formulæ are given in the works of Messrs. Baily, Milne, and Morgan.

219. $$A_{\underset{(1)}{m},\,m_1}=\frac{1}{2}\left\{A_{m,\,m_1}+\frac{a_{m-1,\,m_1}}{p_{m-1,\,1}}-\frac{a_{m,\,m_1-1}}{p_{m_1-1,\,1}}\right\}.$$

By Davies's Tables—

$$A_{m,\,m_1}=1-\frac{(1-r)\,\mathrm{N}_{m-1,\,m_1-1}}{\mathrm{D}_{m,\,m_1}}.\quad \text{(Art. 187.)}$$

When $m-1$ is greater than m_1,

$$\frac{a_{m-1,m_1}}{p_{m-1,1}}=\frac{\mathrm{N}_{m-1,m_1}}{\mathrm{D}_{m-1,m_1}}\cdot\frac{l_{m-1}}{l_m}=\frac{\mathrm{N}_{m-1,m_1}}{l_{m-1}.l_{m_1}\,r^{m-1}}\cdot\frac{l_{m-1}}{l_m}=\frac{\mathrm{N}_{m-1,m_1}}{l_m.l_{m_1}\,r^m}.r=$$

$$r\frac{\mathrm{N}_{m-1,m_1}}{\mathrm{D}_{m,m_1}}$$

$$\frac{a_{m,m_1-1}}{p_{m_1-1,1}}=\frac{\mathrm{N}_{m,m_1-1}}{\mathrm{D}_{m,m_1-1}}\cdot\frac{l_{m_1-1}}{l_m}=\frac{\mathrm{N}_{m,m_1-1}}{l_m.l_{m_1-1}\,r^m}\cdot\frac{l_{m_1-1}}{l_{m_1}}=\frac{\mathrm{N}_{m,m_1-1}}{l_m.l_{m_1}r^m}=\frac{\mathrm{N}_{m,m_1-1}}{\mathrm{D}_{m,m_1}}.$$

When m_1-1 is greater than m,

$$\frac{a_{m-1,m_1}}{p_{m-1,1}}=\frac{N_{m-1,m_1}}{l_{m-1}.l_{m_1}.r^{m_1}}\cdot\frac{l_{m-1}}{l_m}=\frac{N_{m-1,m_1}}{D_{m,m_1}},$$

$$\frac{a_{m,m_1-1}}{p_{m_1-1}}=\frac{N_{m,m_1-1}}{l_m.l_{m_1-1}\,r^{m_1-1}}\cdot\frac{l_{m_1-1}}{l_{m_1}}=\frac{N_{m,m_1-1}.r}{l_m.l_{m_1}\,r^{m_1}}=\frac{N_{m,m_1-1}.r}{D_{m,m_1}}.$$

220. When $m-1$ is greater than m_1,

$$\underset{(1)}{A}_{m,m_1}=\frac{1}{2}\left\{\frac{D_{m,m_1}+r(N_{m-1,m_1-1}+N_{m-1,m_1})-(N_{m-1,m_1-1}+N_{m,m_1-1})}{D_{m,m_1}}\right\}=$$

$$\frac{1}{2}\left\{1+\frac{r(N_{m-1,m_1-1}+N_{m-1,m_1})-(N_{m-1,m_1-1}+N_{m,m_1-1})}{D_{m,m_1}}\right\}.$$

221. When m_1-1 is greater than m,

$$\underset{(1)}{A}_{m,m_1}=\frac{1}{2}\left\{\frac{D_{m,m_1}+r(N_{m-1,m_1-1}-N_{m,m_1-1})-N_{m-1,m_1-1}+N_{m-1,m_1}}{D_{m,m_1}}\right\}=$$

$$\frac{1}{2}\left\{1-\frac{(N_{m-1,m_1-1}-N_{m-1,m_1})-r(N_{m-1,m_1-1}-N_{m,m_1-1})}{D_{m,m_1}}\right\}.$$

The divisor for the annual premium will be

$$1+\frac{N_{m,m_1}}{D_{m,m_1}}=\frac{D_{m,m_1}+N_{m,m_1}}{D_{m,m_1}}=\frac{N_{m-1,m_1-1}}{D_{m,m_1}}.$$

222. When $m-1$ is greater than m_1, the annual premium will therefore be

$$\frac{1}{2}\left\{\frac{D_{m,m_1}+r(N_{m-1,m_1-1}+N_{m-1,m_1})-(N_{m-1,m_1-1}+N_{m,m_1-1})}{N_{m-1,m_1-1}}\right\}.$$

223. When m_1-1 is greater than m, the annual premium will be

$$\frac{1}{2}\left(\frac{D_{m,m_1}+r(N_{m-1,m_1-1}-N_{m,m_1-1})-N_{m-1,m_1-1}+N_{m-1,m_1}}{N_{m-1,m_1-1}}\right).$$

224. If the risk be for t years only the expression for the single premium will be

$$\underset{(1)}{A}_{(m,m_1)_{\overline{t|}}}=\frac{1}{2}\left\{A_{(m,m_1)_{\overline{t|}}}+\frac{a_{(m-1,m_1)_{\overline{t|}}}}{p_{m-1,1}}-\frac{a_{(m,m_1-1)_{\overline{t|}}}}{p_{m_1-1,1}}\right\},$$

and the divisor to find the annual premium,

$$1+a_{(m,m_1)_{\overline{t-1|}}}=1-p_{(m,m_1),t}\,r^t+a_{(m,m_1)_{\overline{t|}}}.\quad \text{By Art. 199.}$$

$$A_{(m,m_1)_{\overline{t|}}}=\frac{r(N_{m-1,m_1-1}-N_{m+t-1,m_1+t-1})-(N_{m,m_1}-N_{m+t,m_1+t})}{D_{m,m_1}}.$$

225. When $m-1$ is greater than m_1,

$$\frac{a_{(m-1,m_1)_{\overline{t|}}}}{p_{m-1,1}}=\frac{N_{m-1,m_1}-N_{m+t-1,m_1+t}}{l_{m-1}.l_{m_1}.r^{m-1}}\cdot\frac{l_{m-1}}{l_m}=\frac{r(N_{m-1,m_1}-N_{m+t-1,m_1+t})}{D_{m,m_1}}$$

$$\frac{a_{(m,m_1-1)_{\overline{t|}}}}{p_{m_1-1,1}}=\frac{N_{m,m_1-1}-N_{m+t,m_1+t-1}}{l_m.l_{m_1-1}\,r^{m_1-1}}\cdot\frac{l_{m_1-1}}{l_{m_1}}=\frac{N_{m,m_1-1}-N_{m+t,m_1+t-1}}{D_{m,m_1}},$$

226. When $m_1 - 1$ is greater than m,

$$\frac{a_{(m-1,m_1)\overline{t|}}}{p_{m-1,1}} = \frac{N_{m-1,m_1} - N_{m+t-1,m_1+t}}{l_{m-1} \cdot l_{m_1} r^{m_1}} \cdot \frac{l_{m-1}}{l_m} = \frac{N_{m-1,m_1} - N_{m+t-1,m_1+t}}{D_{m,m_1}},$$

$$\frac{a_{(m,m_1-1)\overline{t|}}}{p_{m_1-1,1}} = \frac{N_{m,m_1-1} - N_{m+t,m_1+t-1}}{l_m \cdot l_{m_1-1} r^{m_1-1}} \cdot \frac{l_{m_1-1}}{l_{m_1}} = \frac{r(N_{m,m_1-1} - N_{m+t,m_1+t-1})}{D_{m,m_1}}.$$

227. **When $m-1$ is greater than m_1,**

$$\underset{(1)}{A}_{(m,m_1)\overline{t|}} =$$

$$\frac{1}{2}\left\{\frac{r(N_{m-1,m_1-1} - N_{m+t-1,m_1+t-1} + N_{m-1,m_1} - N_{m+t-1,m_1+t}) - (N_{m,m_1} + N_{m,m_1-})}{D_{m,m_1}}\right.$$
$$\left.\frac{+N_{m+t,m_1+t} + N_{m+t,m_1+t-1}}{D_{m,m_1}}\right\}.$$

228. **When m_1-1 is greater than m,**

$$\underset{(1)}{A}_{(m,m_1)\overline{t|}} = \frac{1}{2}\left\{\frac{r(N_{m-1,m_1-1} - N_{m+t-1,m_1+t-1} - N_{m,m_1-1} + N_{m+t,m_1+t-1})}{D_{m,m_1}}\right.$$
$$\left.\frac{-(N_{m,m_1} + N_{m+t-1,m_1+t}) + N_{m+t,m_1+t} + N_{m-1,m_1}}{D_{m,m_1}}\right\}.$$

229. **The divisor for the annual premium will be**

$$1 + a_{(m,m_1)\overline{t-1|}} = \frac{N_{m-1,m_1-1} - N_{m+t-1,m_1+t-1}}{D_{m,m_1}};$$

substituting, therefore, in the denominator in each of the above cases, $N_{m-1,m_1-1} - N_{m+t-1,m_1+t-1}$ for D_{m,m_1}, we have the expression for the annual premium.

Required the single and annual premium for the assurance of £100 payable on the decease of a person aged 60, provided another aged 20, survive him. (Northampton, 3 per cent.)

Table, p. 182,

$$
\begin{array}{rlrl}
1+a_{20.60} = & 9.59688 & a_{20.20} & 8.81023 \\
 & 2621920. & \text{Table 5, } 42040.1 = \frac{l_{20}}{l_{60}} \text{ inverted} & \\
\hline
 & 191938 & & 881023 \\
 & 86371 & & 35241 \\
 & 960 & & 176 \\
 & 192 & & 35 \\
\cline{4-4}
 & 57 & & 9.16475 \\
 & 2 & & \\
\cline{2-2}
(1-r)(1+a_{20.60}) = & .279520 & & \\
A_{20.60} = & .720480 & a_{19.60} = & 8.62683 \\
 & 9.16475 & & 50310.1 = \frac{l_{19}}{l_{20}} \text{ inverted} \\
\cline{2-2}\cline{4-4}
 & 9.88523 & & 862683 \\
 & 8.73941 & & 8627 \\
\cline{2-2}
2) & 1.14582 & & 2588 \\
\cline{2-2}
\underset{(1)}{A}_{60.20} = & .57291 & & 43 \\
\cline{4-4}
 & 100 & & 8.73941 \\
\cline{2-2}
 & \multicolumn{3}{l}{57.291 = £57\ 5\ 10 = \text{single premium.}}
\end{array}
$$

$$\frac{\underset{(1)}{A_{60.20}}}{1+a_{60.20}}=\frac{.57291}{9.59688}=.05969$$

100

5.969 = £5 19 5 = annual premium.

By Davies's Tables,—

Here, $m-1$ is greater than m_1, the age of the life assured agains

$$\frac{1}{2}\left(1+\frac{r(N_{m-1,\,m_1-1}+N_{m-1,m_1})-(N_{m-1,\,m_1-1}+N_{m,\,m_1-1})}{D_{m,\,m_1}}\right)$$

$N_{m-1,\,m_1-1}=N_{59.19}=17036765.7$ $N_{59.19}=17036765.7$

$N_{m-1,m_1}=N_{59.20}=16757653.8$ $N_{60.19}=15514638.2$

33794419.5 32551403.9

478079.

3041497755

236560937

2703553

236561

13518

32810123.24

32551403.9 1.

$D_{20.60}=$1775240)2587193 (.14574

1775240 2) 1.14574

811953 .57287

710096 100

101857 57.287 = single premium.

88762

13095

12426

669

$r(N_{59.19}+N_{59.20})-(N_{59.19}+N_{60.19})=258719.3$

$D_{20.60}=1775240.9$ 2

1.7036766)2033960.2 (.11938

17036766 .05969

3302836 100

1703677 5.969 =£5 19 5

1599159 =annual p

1533308

65851

51110

14741

equired the single and annual premium for the assurance of £1 ble on the decease of a person aged 25, provided another aged 65, ive him. (Northampton, 3 per cent.)

ere, m_1-1 is greater than m, the age of the life assured; the for- for the single premium is therefore

$$\frac{1}{2}\left(1-\frac{(\mathrm{N}_{24.64}-\mathrm{N}_{24.65})-r\,(\mathrm{N}_{24.64}-\mathrm{N}_{25.64})}{\mathrm{D}_{25.65}}\right)$$

```
 = 9520176.1                                    N₂₄.₆₄ = 9520176.1
 = 8532038.2                                    N₂₅.₆₄ = 9352882.9
   ─────────                                             ─────────
    988137.9                                              167293.2
    162420.6   1.                                          478079.
   ─────────  ──────                                     ─────────
7385)825717.3  (.72598                                    15056388
     7961695  2).27402                                     1171052
     ───────   ───────                                       13383
      295478   .13701 = single premium.                       1170
      227477                                                    67
      ──────                                              ─────────
       68001                                              162420.60
       56869
      ──────
       11132
       10236
      ──────
         896

                  D₂₅.₆₅=1137384.9
-N₂₅.₆₅)-r(N₂₄.₆₄-N₂₅.₆₄)= 825717.3     2
                                ─────────  ───────
       N₂₄.₆₄=  9520176.)311667.6  (.03274
                                2856053    ───────
                                ───────    .01637 =annual prem.
                                 260623
                                 190403
                                 ──────
                                  70220
                                  66641
                                  ─────
                                  .3579
```

juired the single and annual premium to insure £1 payable on eath of a person now aged 60, provided that event take place 10 years, and another life aged 20, survive him. (Northamp- per cent.)

$$A_{\overset{(60.20)}{(1)}\overline{10|}}=\frac{1}{2}\left(A_{(60.20)\overline{10|}}+\frac{a_{(59.20)\overline{10|}}}{p_{59.1}}-\frac{a_{(60.19)\overline{10|}}}{p_{19.1}}\right)$$

$$A_{(60.20)\overline{10|}}=r\,(1-p_{(60.20),\,10}\,.r^{10})-(1-r)\,a_{(60.20)\overline{10|}}.$$

$$p_{(60.20),\,10}\,r^{10}=1-\frac{l_{70}}{l_{60}}.\frac{l_{30}}{l_{20}}r^{10}=1-\frac{1232\times4385\times.74409391}{2038\times5132}=$$

$$1-\frac{4019833.5}{10459016}=1-.384341=.615659$$

$$r(1-p_{(60.20),\,10}\,.r^{10})=.615659\times.970874=.597728$$

N 2

$$a_{(60.20)\overline{10|}} = a_{60.20} - r^{10}p_{(60.20),10}\cdot a_{70.30} = 8.59688 - .384341\times 6.04334 =$$

$$8.59688 - 2.32270 = 6.27418$$

$$(1-r)a_{(60.20)\overline{10|}} = .0291262\times 6.27418 = .182743$$

$$A_{(60.20)\overline{10|}} = .597728 - .182743 = .414985$$

$$\frac{a_{(59.20)\overline{10|}}}{p_{59,1}} = \frac{l_{59}}{l_{60}}\left(a_{20.59} - \frac{l_{69}}{l_{59}}\cdot\frac{l_{30}}{l_{20}}r^{10}.a_{30.69}\right) =$$

$$1.04024\left(8.81023 - \frac{1312\times 4385\times .7440931}{2120\times 5132}\times 6.29990\right) =$$

$$1.04024\times 6.33143 = 6.58621$$

$$\frac{a_{(60.19)\overline{10|}}}{p_{19,1}} = \frac{l_{19}}{l_{20}}\left(a_{19.60} - \frac{l_{70}}{l_{60}}\cdot\frac{l_{29}}{l_{19}}r^{10}.a_{29.70}\right) =$$

$$1.01305\left(8.62683 - \frac{1232\times 4460\times .74409391}{2038\times 5199}\times 6.05556\right) =$$

$$1.01305(8.62683 - 2.33672) = 1.01305\times 6.29011. = 6.37219$$

$$\frac{.414985 + 6.58621 - 6.37219}{2} = .31450 = \text{single premium.}$$

$$1 + a_{(60.20)\overline{10|}} = 7.27418$$

$$p_{(60.20),10}r^{10} = \underline{.38434}$$

$$6.88984$$

$$\frac{.31450}{6.88984} = .04564 = \text{annual prem.}$$

By Davies's Method,

Here $m-1$ is greater than m_1, the age of the life assured against:

$N_{m-1,m_1-1} = N_{59.19} = 17036766$

$N_{m-1,m_1} = N_{59.20} = 16757654$

33794420

9520517

24273903

$N_{m+t-1,m_1+t-1} = N_{69.29} = 48056$

$N_{m+t-1,m_1+t} = N_{69.30} = 47148$

95205

$24273903\times .970874 = 23566901.2 = r\{N_{59.19} + N_{59.20} - N_{69.29} - N_{69}$

$N_{m+t,m_1+t} = N_{70.30} = 4123360$

$N_{m+t,m_1+t-1} = N_{70.29} = 4202366$

8325726

23566901

31892627

30776163

2)1116464

$N_{m,m_1} = N_{60.20} = 15261525$

$N_{m,m_1-1} = N_{60.19} = 15514638$

30776163

1775241)558232(.31446 = single premium.

532572

25660

7908

7101

807

710

97

$$\frac{558232}{N_{50.19}-N_{69.20}} = .04564 = \text{annual premium.}$$

A Preparatory Table for finding the Values of Annuities, &c., on Two Joint Lives (Northampton 3 per Cent.)

Difference of Age 39 Years.

Ages.		D.	N.	Value.
10	49	3914694.5	43997691.3	11.23912
11	50	3664519.7	40333171.6	11.00641
12	51	3426178.9	36906992.7	10.77206
13	52	3199166.8	33707825.9	10.53644
14	53	2984184.5	30723641.4	10.29550
15	54	2780673.6	27942967.8	10.04900
16	55	2588098.3	25354869.5	9.79672
17	56	2404594.2	22950275.3	9.54435
18	57	2229077.3	20721198.0	9.29587
19	58	2061475.2	18659722.8	9.05164
20	59	1902069.0	16757653.8	8.81023
21	60	1750335.0	15007318.8	8.57397
22	61	1606805.5	13400513.3	8.33985
23	62	1472119.1	11928394.2	8.10287
24	63	1346577.9	10581816.3	7.85830
25	64	1228933.4	9352882.9	7.61057
26	65	1119463.8	8233419.1	7.35479
27	66	1017034.6	7216384.5	7.09552
28	67	921278.4	6295106.1	6.83301
29	68	831845.3	5463260.8	6.56764
30	69	748402.4	4714858.4	6.29990
31	70	670629.1	4044229.3	6.03050
32	71	598222.6	3446006.7	5.76041
33	72	530894.2	2915112.5	5.49095
34	73	468367.0	2446745.5	5.22399
35	74	410378.5	2036367.0	4.96217
36	75	356677.9	1679689.0	4.70926
37	76	307026.6	1372662.4	4.47083
38	77	262363.5	1110298.9	4.23191
39	78	222672.7	887626.3	3.98624
40	79	187890.5	699735.7	3.72417
41	80	156863.9	542871.9	3.46078
42	81	128985.1	413886.8	3.20879
43	82	104331.0	309555.8	2.96706
44	83	82666.6	226889.2	2 74463
45	84	63460.7	163428.5	2.57527
46	85	47797.8	115630.7	2.41916
47	86	35286.3	80344.4	2.27693
48	87	25563.9	54780.5	2.14288
49	88	18078.3	36702.2	2.03017
50	89	12758.2	23944.0	1.87675
51	90	8929.5	15014.5	1.68145
52	91	6218.5	8795.9	1.41447
53	92	4132.0	4663.9	1.12875
54	93	2590.5	2073.5	.80043
55	94	1368.8	704.6	.51476
56	95	570.9	133.8	.23430

A Preparatory Table for finding the Values of Annuities, &c., on Two Joint L
(Northampton 3 per Cent.)

Difference of Age 40 Years.

Ages.		D.	N.	Value.
10	50	3698408.2	40847307.7	11.04457
11	51	3456918.0	37390389.7	10.81611
12	52	3228129.0	34162260.7	10.58268
13	53	3011447.3	31150813.4	10.34414
14	54	2806311.4	28344502.0	10.10027
15	55	2612182.6	25732319.4	9.85089
16	56	2428549.8	23303769.6	9.59576
17	57	2253647.2	21050122.4	9.34047
18	58	2086455.6	18963666.8	9.08894
19	59	1926901.1	17036765.7	8.84154
20	60	1775240.9	15261524.8	8.59688
21	61	1630980.2	13630544.6	8.35728
22	62	1494605.6	12135939.0	8.11983
23	63	1367466.0	10768473.0	7.87476
24	64	1248296.9	9520176.1	7.62653
25	65	1137384.9	8382791.2	7.37023
26	66	1033580.7	7349210.5	7.11044
27	67	936514.6	6412695.9	6.84741
28	68	845833.8	5566862.1	6.58151
29	69	761202.9	4805659.2	6.31325
30	70	682298.9	4123360.3	6.04334
31	71	608816.8	3514543.5	5.77274
32	72	540465.6	2974077.9	5.50281
33	73	476966.2	2497111.7	5.23541
34	74	418053.9	2079057.8	4.97318
35	75	363476.1	1715581.7	4.71993
36	76	312992.2	1402589.5	4.48123
37	77	267562.2	1135027.3	4.24211
38	78	227174.1	907853.2	3.99629
39	79	191767.2	716086.0	3.73414
40	80	160213.6	555872.4	3.46957
41	81	131837.4	424035.0	3.21635
42	82	106721.6	317313.3	2.97328
43	83	84605.3	232708.0	2.75051
44	84	64984.7	167723.3	2.58096
45	85	48973.9	118749.4	2.42475
46	86	36176.4	82573.0	2.28251
47	87	26225.5	56347.5	2.14858
48	88	18558.6	37788.9	2.03619
49	89	13111.0	24677.9	1.88223
50	90	9190.0	15487.9	1.68529
51	91	6407.8	9080.1	1.41702
52	92	4261.7	4818.3	1.13061
53	93	2674.4	2143.9	.80163
54	94	1414.7	729.22	.51546
55	95	590.7	138.56	.23459

A Preparatory Table for finding the Value of Annuities, &c., on Two Joint Lives. (Northampton 3 per Cent.)

Difference of Age 41 Years.

Ages.		D.	N.	Value.
10	51	3488886.7	37864025.2	10.85275
11	52	3257091.2	34606934.0	10.62510
12	53	3038710.1	31568223.9	10.38869
13	54	2831949.2	28736274.7	10.14717
14	55	2636266.9	26100007.8	9.90037
15	56	2451149.4	23648858.4	9.64807
16	57	2276098.9	21372759.5	9.39009
17	58	2109453.4	19263306.1	9.13190
18	59	1950250.7	17313055.4	8.87735
19	60	1798417.2	15514638.2	8.62683
20	61	1654187.7	13860450.5	8.37901
21	62	1517092.2	12343358.3	8.13619
22	63	1388353.9	10955004.4	7.89064
23	64	1267660.4	9687344.0	7.64191
24	65	1155305.8	8532038.3	7.38509
25	66	1050126.8	7481911.4	7.12477
26	67	951750.6	6530160.8	6.86121
27	68	859822.1	5670338.7	6.59478
28	69	774003.5	4896335.2	6.32599
29	70	693968.9	4202366.3	6.05556
30	71	619411.0	3582955.3	5.78455
31	72	550037.0	3032918.3	5.51403
32	73	485565.3	2547353.0	5.24616
33	74	425729.3	2121623.7	4.98350
34	75	370274.2	1751349.4	4.72987
35	76	318957.7	1432391.7	4.49085
36	77	272760.9	1159630.7	4.25145
37	78	231675.5	927955.1	4.00541
38	79	195643.9	732311.2	3.74308
39	80	163519.2	568792.0	3.47844
40	81	134652.7	434139.3	3.22414
41	82	109081.6	325057.6	2.97995
42	83	86543.9	238513.7	2.75598
43	84	66508.7	172005.0	2.58620
44	85	50149.9	121855.0	2.42981
45	86	37066.5	84788.4	2.28746
46	87	26887.0	57901.3	2.15350
47	88	19038.8	38862.4	2.04121
48	89	13459.2	25403.1	1.88741
49	90	9444.1	15959.0	1.68982
50	91	6594.8	9364.2	1.41992
51	92	4391.4	4972.7	1.13237
52	93	2758.4	2214.4	0.80277
53	94	1460.6	753.8	0.51611
54	95	610.4	143.4	0.23485

230. To find the single premium for the assurance of £1 payable the death of A, aged m, provided he die before B, aged m_1, or with t years after the death of B.

The present value of the risk during the first t years will evident be that of a temporary assurance for t years on the life of A, viz., $A_{($

After the expiration of t years it will depend on the following event

That A	B	The probability of which is
shall die in the nth year	surviving it	$(p_{m,n-1}-p_{m,n})\,p_{m_1,n}$
	having died within the last t years, *including* the nth	$(p_{m,n-1}-p_{m,n})\,(p_{m_1,n-t}-p_{m_1,n})$
	dying in the tth year previous to the nth; it being an *even chance* whether they die at such periods of the year as shall make the interval greater than t years, or less.	$\frac{1}{2}(p_{m,n-1}-p_{m,n})(p_{m_1,n-t-1}-p_{m_1,n-t})$

their sum, $\frac{1}{2}\,(p_{m_1,n-t-1}+p_{m_1,n-t})\,(p_{m,n-1}-p_{m,n})=$

$$\tfrac{1}{2}\{p_{m,n-1}\,p_{m_1,n-t-1}+p_{m,n-1}\,p_{m_1,n-t}-p_{m,n}\,p_{m_1,n-t-1}-p_{m,n}\,p_{m_1,n-t}\}$$

will be the total probability of the event happening in any year aft the tth; and since

$$p_{m,n-1}\cdot p_{m_1,n-t-1}=\frac{l_{m+n-1}\cdot l_{m_1+n-t-1}}{l_m\cdot l_{m_1}}=\left(\frac{l_{m+n-1}}{l_{m-1}}\cdot\frac{l_{m_1+n-t-1}}{l_{m_1-t-1}}\right)\cdot\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t-1}}{l_{m_1}}$$
$$\frac{p_{(m-1,\,m_1-t-1),n}}{p_{m-1,1}\cdot p_{m_1-t-1,t+1}},$$

$$p_{m,n-1}\cdot p_{m_1,n-t}=\frac{l_{m+n-1}}{l_m}\cdot\frac{l_{m_1+n-t}}{l_{m_1}}=\left(\frac{l_{m+n-1}\cdot l_{m_1+n-t}}{l_{m-1}\cdot l_{m_1-t}}\right)\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t}}{l_{m_1}}=$$
$$\frac{p_{(m-1,\,m_1-t),n}}{p_{m-1,1}\cdot p_{m_1-t,t}},$$

$$p_{m,n}\cdot p_{m_1,n-t-1}=\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n-t-1}}{l_{m_1}}=\left(\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n-t-1}}{l_{m_1-t-1}}\right)\cdot\frac{l_{m_1-t-1}}{l_{m_1}}=$$
$$\frac{p_{(m,\,m_1-t-1),n}}{p_{m_1-t-1,t+1}};$$

and similarly, $p_{m,n}\cdot p_{m_1,n-t}=\dfrac{p_{(m,\,m_1-t),n}}{p_{m_1-t,t}}$; the value of the risk in a year after the tth will therefore be

$$\frac{1}{2}\left\{\frac{p_{(m-1,\,m_1-t-1),\,n}}{p_{m-1,\,1}\cdot p_{m_1-t-1,\,t+1}}+\frac{p_{(m-1,\,m_1-t),\,n}}{p_{m-1,\,1}\cdot p_{m_1-t,\,t}}-\frac{p_{(m,\,m_1-t-1),\,n}}{p_{m_1-t-1,\,t+1}}-\frac{p_{(m,\,m_1-t),\,n}}{p_{m_1-t,\,t}}\right\}r^n,$$

the successive values of which being taken for every year after the tth, and added to $A_{(m)_{\cap}}$ the value of the risk during the first t years, will give

$$A_{(m)_{\cap}}+\frac{1}{2}\left\{\frac{a_{(m-1,\,m_1-t-1)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t-1,\,t+1}}+\frac{a_{(m-1,\,m_1-t)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t,\,t}}-\frac{a_{(m,\,m_1-t-1)_{t|}}}{p_{m_1-t-1,\,t+1}}-\frac{a_{(m,\,m_1-t)_{t|}}}{p_{m_1-t,\,t}}\right\}.$$

231. By Art. 161, the divisor for the annual premium will be

$$1+a_{(m)_{\cap}}+\frac{a_{(m,\,m_1-t)_{t|}}}{p_{m_1-t,\,t}}.$$

232. By Davies's Tables,

$$A_{(m)_{\cap}}=\frac{M_m-M_{m+t}}{D_m}.$$

233. When $m-1$ is greater than m_1-t,

$$\frac{a_{(m-1,\,m_1-t-1)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t-1,\,t+1}}=\frac{N_{m+t-1,\,m_1-1}}{l_{m-1}\cdot l_{m_1-t-1}r^{m-1}}\cdot\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t-1}}{l_{m_1}}=$$

$$\frac{r\cdot N_{m+t-1,\,m_1-1}}{l_m\cdot l_{m_1}\cdot r^m}=\frac{r\cdot N_{m+t-1,\,m_1-1}}{D_{m,\,m_1}}$$

$$\frac{a_{(m-1,\,m_1-t)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t,\,t}}=\frac{N_{m+t-1,\,m_1}}{l_{m-1}\cdot l_{m_1-t}r^{m-1}}\cdot\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t}}{l_{m_1}}=\frac{r\,N_{m+t-1,\,m_1}}{D_{m,\,m_1}}$$

$$\frac{a_{(m,\,m_1-t-1)_{t|}}}{p_{m_1-t-1,\,t+1}}=\frac{N_{m+t,\,m_1-1}}{l_m\cdot l_{m_1-t-1}r^m}\cdot\frac{l_{m_1-t-1}}{l_{m_1}}=\frac{N_{m+t,\,m_1-1}}{D_{m,\,m_1}}$$

$$\frac{a_{(m,\,m_1-t)_{t|}}}{p_{m_1-t,\,t}}=\frac{N_{m+t,\,m_1}}{l_m\cdot l_{m_1-t}r^m}\cdot\frac{l_{m_1-t}}{l_{m_1}}=\frac{N_{m+t,\,m_1}}{D_{m,\,m_1}},$$

the single premium is therefore

$$\frac{M_m-M_{m+t}}{D_m}+\frac{r\,(N_{m+t-1,\,m_1-1}+N_{m+t-1,\,m_1})-(N_{m+t,\,m_1-1}+N_{m+t,\,m_1})}{2\,D_{m,\,m_1}}.$$

234. When m_1-t is greater than $m-1$,

$$\frac{a_{(m-1,\,m_1-t-1)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t-1,\,t+1}}=\frac{N_{m+t-1,\,m_1-1}}{l_{m-1}\cdot l_{m_1-t-1}\cdot r^{m_1-t-1}}\cdot\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t-1}}{l_{m_1}}=$$

$$\frac{r^{t+1}\cdot N_{m+t-1,\,m_1-1}}{D_{m,\,m_1}},$$

$$\frac{a_{(m-1,\,m_1-t)_{t|}}}{p_{m-1,\,1}\cdot p_{m_1-t,\,t}}=\frac{N_{m+t-1,\,m_1}}{l_{m-1}\cdot l_{m_1-t}r^{m_1-t}}\cdot\frac{l_{m-1}}{l_m}\cdot\frac{l_{m_1-t}}{l_{m_1}}=\frac{r^t\,N_{m+t-1,\,m_1}}{D_{m,\,m_1}}$$

$$\frac{a_{(m,\, m_1-t-1)_{\overline{t}|}}}{p_{m_1-t-1,\, t+1}} = \frac{N_{m+t,\, m_1-1}}{l_m . l_{m_1-t-1} . r^{m_1-t-1}} \cdot \frac{l_{m_1-t-1}}{l_{m_1}} = \frac{r^{t+1} . N_{m+t,\, m_1-1}}{D_{m,\, m_1}}$$

$$\frac{a_{(m,\, m_1-t)_{\overline{t}|}}}{p_{m_1-t,\, t}} = \frac{N_{m+t,\, m_1}}{l_m . l_{m_1-t} r^{m_1-t}} \cdot \frac{l_{m_1-t}}{l_{m_1}} = \frac{r^t N_{m+t,\, m_1}}{D_{m,\, m_1}};$$

the single premium will therefore be

$$\frac{M_m - M_{m+t}}{D_m} + \frac{r^{t+1}(N_{m+t-1,\, m_1-1} - N_{m+t,\, m_1-1}) + r^t (N_{m+t-1,\, m_1} - N_{m+t,}}{2D_{m,\, m_1}}$$

SUCCESSIVE LIVES.

235. To determine the present value of a perpetuity of £1 per an to be entered upon after the expiration of a life aged *m*.

The value of £1 per annum during the existence of the life, and perpetual annuity of £1 to be entered upon after the decease of the s individual, are, together, evidently equal to the present value of a petual annuity of £1, to be entered upon immediately. Conseque if from the present value of a perpetual annuity of £1 to be ent upon immediately, we subtract the present value of an annuity of on a life aged *m*, we obtain the value of the reversion. By Art the present value of a perpetuity of £1 per annum is $\frac{1}{i}$; the for will therefore be $\frac{1}{i} - a_m$.

236. The present value of a perpetuity of £*i* per annum being it might appear that the present value of an assurance of £1 recei at the end of the year in which the life may fail, and the present v of a perpetuity of £*i* per annum to be entered upon after the failu the existence of the same life, would both be of the same amount; however, is not the case, for the person entitled to the reversio annuity would, at the end of the year in which the life shall fail, re the first payment of his annuity, while the other would receive the insured, which he would then have to invest; and consequently, a from the investment must elapse before he would receive his first y dividend of £*i* on this sum. In order, therefore, to place him a time of effecting the insurance in the same situation as the othe insurance for the sum of £1 + *i* should be effected; consequently, multiply the present value of the insurance of any *sum* by 1 + shall have the present value of the reversion of the perpetual nuity which that sum would now purchase.

237. The present value of an assurance of £1 (Art. 188) is $\frac{1-}{1+}$ this multiplied by $1+i$, gives $1 - ia_m$, the present value of the

sion of a perpetuity of £i, being the perpetuity which might be purchased for £1 to be entered upon immediately.

By the formula above, the present value of a reversion of a perpetuity of £1 is $\frac{1}{i}-a_m$; this multiplied by i, gives $1-ia_m$, the value of the reversion of £i per annum, as before.

Example. What is the present value of a perpetuity of £50 per annum, to be entered upon after the failure of the existence of a life aged 39? (Carlisle 4 per cent.)

$$\begin{array}{r}
.04)\underline{1.00}\\
25\\
a_{39}=\underline{15.2718}\\
9.7282\\
\underline{50}\\
486.410 = \text{£}486\ 8\ 2.
\end{array}$$

238. An annuity is to be enjoyed during the existence of a life aged m, and at his decease a successor is to be named who is to enjoy the annuity during his life. Required an expression for the present value of the annuity on the second life.

Let the value of an annuity of £1 on the second life at the time of entering on possession be denoted by V_2, then at the end of the year in which the existence of the present life shall cease, his successor will be put in possession of £1, and of an annuity whose value is V_2: the present value of what is to be enjoyed by the second life is therefore the present value of an insurance of $(1+V_2)$ pounds, payable at the end of the year in which the existence of a life aged m shall fail, viz.,

$$\frac{1-ia_m}{1+i}(1+V_2) \quad \text{Art. 188.)}$$

If to this a_m be added, we have $a_m+\frac{1-ia_m}{1+i}(1+V_2)$, the value of the two successive lives.

239. If there be three lives, and we call the value of the annuity on the third life at the time of entering on possession V_3, we have $1+V_3$, the sum of which the third life enters on possession at the end of the year in which the second shall cease to exist. If we call the value of the two successive lives x, then $\frac{1}{i}-x$ is the present value of a perpetuity to be entered upon at the same time. Now, when a perpetuity and any other sum are deferred for the same time, the value of the perpetuity at the time of entering on possession is to its *present* value as the value of that sum at the time of possession is to its present value:

$$1+\frac{1}{i}:\frac{1}{i}-x :: 1+V_3 : \frac{1-ix}{1+i}(1+V_3).$$

If x be equal to the value of an annuity on a life aged m_1, the expression will become $\frac{1-ia_{m_1}}{1+i}(1+\mathrm{V}_2)$, which is the same thing as the present value of an assurance of $(1+\mathrm{V}_2)$ pounds on a life aged m_1.

From the nature of the reasoning in this article, it is evident that if V_n be the value of an annuity on the nth life at the time of entering on possession, and the value of the $(n-1)$ preceding lives be x_{n-1}, the present value of the nth life is $\frac{1-ix_{n-1}}{1+i}(1+\mathrm{V}_n)$.

240. Let x_{n-1}, the present value of the $(n-1)$ successive lives, be equal to an annuity certain for the term of t years, and V_n be equal to the value of an annuity certain for t_1 years, then $x_{n-1}=\frac{1-r^t}{i}$, and the expression $\frac{1-ix_{n-1}}{1+i}=\frac{1}{(1+i)}[1-1+(1+i)^{-t}]=\frac{(1+i)^{-t}}{1+i}=r^{t+1}$, and the expression $1+\mathrm{V}_n=1+\frac{1-r^{t_1}}{i}=\frac{(1+i)-r^{t_1}}{i}$; therefore,

$$\frac{1-ix_{n-1}}{1+i}(1+\mathrm{V}_n)=(1+i)^{-(t+1)}\times\frac{(1+i)-(1+i)^{-t_1}}{i}=$$
$$\frac{(1+i)^{-t}-(1+i)^{-(t+t_1+1)}}{i}=\frac{r^t-r^{t+t_1+1}}{i},$$

the present value of the nth life in succession; to which adding $\frac{1-r^t}{i}$, the present value of the $(n-1)$ preceding lives, we have

$$\frac{1-r^{(t+t_1+1)}}{i},$$

the present value of the n successive lives, which is the same as the value of an annuity certain for $t+t_1+1$ years.

241. From which it appears that the effect of adding a life whose value at the time of nomination is the same as that of an annuity certain for the term of t_1 years, is to extend the term of an annuity certain, whose value is equivalent to that of an annuity on all the previous lives in succession, by the term of t_1+1 years.

242. Also, that if a_m be the value of an annuity on the life in possession, and V_2, V_3, V_4, &c., be the values of others that succeed it at the times of their respective nominations, while the terms of equivalent annuities certain are t, t_1, t_2, $t_3 \ldots\ldots t_q$, the present value of all the lives in succession will be the value of an annuity certain for the term of $(q+t+t_1+t_2+t_3\ldots\ldots+t_q)$ years.

243. If each of the lives which succeed that now in possession be of the same value at the time of nomination, we shall have t_1, t_2, $t_3 \ldots +t_q$ equal to each other, and the expression $(q+t+t_1+t_2+t_3\ldots+t_q)$ will

become $q+t+qt_1=t+q(t_1+1)$; so that when the present value of the life in possession is the same as the present value of an annuity certain for t years, and the value of each of the q successive lives at the times of their respective nominations be the same as that of an annuity certain for t_1 years, we shall have the present value of all the lives, the same as that of an annuity certain for $t+q(t_1+1)$ years; that is

$$\frac{1-r^{t+q(t_1+1)}}{i}.$$

Example. What is the present value of the next presentation to a living of the clear annual value of £500, supposing the age of the present incumbent to be 65 years, the rate of interest 6 per cent, and that the age of the clerk at the time of presentation will be 28 years? (Chester, Prob. Table 2.)

$\frac{1-ia_{65}}{1+i}(1+V_2)$ $\quad i=.06\quad a_{65}=a_{65}=7.3751\quad V_2=a_{28}=12.5987$

$$\begin{array}{r} 7.3751 \\ .06 \\ \hline .442506 \\ 1. \\ \hline 1\text{-}ia_{65}=.557494 \end{array} \qquad \frac{1-ia_{65}}{1+i}(1+V_2)=\frac{.557494\times 13.5987}{1.06}=7.58119$$

$7.58119\times 500=3790.595=£3790\ 11\ 11$, the value required.

PURCHASE OF ANNUITIES, &c.

244. To find the annuity to be required on a single life for a certain amount of purchase money, so as to allow the purchaser a given rate of interest beside the premium necessary to secure his capital by a life assurance:

Let s = the sum,
i = annual interest of £1,
p = annual premium for assurance of £1,
a = the annuity.

If we assume £1 to be the sum advanced, and the annuity to be payable at the end of the year, the last year's interest must be assured in addition to the principal, viz. $(1+i)$, the annual premium for which is $p(1+i)$, which, subtracted from £1, leaves

$$1-p(1+i)=\text{ the available principal,}$$

$$1-p(1+i) : i+p(1+i) :: s : s\,.\,\frac{i+p(1+i)}{1-p(1+i)}=\text{ the annuity required.}$$

245. If the annuity be payable until death,

$$1-p=\text{the available principal,}$$

$$1-p : i+p :: s : s\,\frac{i+p}{1-p}=\text{ the annuity.}$$

246. To find the principal.

If payable at the end of the year,

$$a=s.\frac{i+p(1+i)}{1-p(1+i)}, \text{ from which}$$

$$s=a.\frac{1-p(1+i)}{i+p(1+i)}.$$

247. If payable until death,

$$s=a.\frac{1-p}{i+p}.$$

248. To find (i) the rate of interest.

If payable at the end of the year,

$$a=s.\frac{i+p(1+i)}{1-p(1+i)},$$

$$a-ap-api=si+sp+spi.$$

By transposition,

$$i\{s+p(s+a)\}=a-p(s+a),$$

$$i=\frac{a-p(s+a)}{s+p(s+a)}.$$

249. If the annuity be payable until death,

$$a=s.\frac{i+p}{1-p},$$

$$a-ap=is+sp,$$

$$i=\frac{a-p(s+a)}{s}.$$

250. To find the annual premium,

$$a=s.\frac{i+p(1+i)}{1-p(1+i)},$$

$$a-ap-api=si+sp+spi,$$

$$p\{s(1+i)+a(1+i)\}=a-si,$$

$$p=\frac{a-si}{(s+a)(1+i)}.$$

251. If the annuity be payable until death,

$$a=s.\frac{i+p}{1-p},$$

$$\therefore a-ap=is+sp,$$

$$p(s+a)=a-is,$$

$$p=\frac{a-is}{a}.$$

Examples.

Required the sum that should be given for an annuity of £50 payable the *end of each year* during the existence of a life, supposing the rchaser to make 5 per cent interest, and to secure his capital by cting an assurance on the life at the rate of £2 8 per cent.

$$=a\frac{1-p\,(1+i)}{i+p\,(1+i)}=50.\frac{1-.024\times1.05}{.05+.024\times1.05}=50\times\frac{1-.0252}{.05.+.0252}=$$

$$50\left(\frac{.9748}{.0752}\right)=\frac{48.74}{.0752}=648.138=£648\ 2\ 9.$$

What annuity payable at the *end of each year* during the existence of iven life should be given for £648 2 9, so as to allow the purchaser er cent interest, and the premium for securing his capital by an urance, supposing the rate £2 8 0 per cent?

$$a=s.\frac{i+p\,(1+i)}{1-p\,(1+i)}=648.138\ \frac{.05+.024\times1.05}{1-.024\times1.05}=$$

$$648.138\times\frac{.05+.0252}{1-.0252}=648.138\times\frac{.0752}{.9748}=£50.$$

Required the sum that should be given for an annuity of £50 during existence of a given life *payable until the day of death*, supposing purchaser to make 5 per cent interest, and to secure his capital by ecting an assurance on the life at the rate of £2 8 0 per cent.

$$s=a\,\frac{1-p}{i+p}=50\times\frac{1-.024}{.05+.024}=50\times\frac{.976}{.074}$$

$$\frac{48.88}{.074}=660.541=£660\ 10\ 10.$$

Required the annuity on a given life payable until the day of decease, it should be allowed for £660 10 10, supposing the purchaser to tain 5 per cent, and to secure his capital by an assurance at the rate £2 8 0 per cent.

$$a=s.\frac{i+p}{1-p}=660.541\times\frac{.05+.024}{1-.024}=660.541\times\frac{.074}{.976}$$

$$\frac{48.88}{.976}=£50.$$

VALUATION OF LIFE POLICIES.

252. When a policy has been in existence a certain number of years, frequently happens that the party possessing it is desirous of dissing of his right therein, either to the office in which the assurance s effected, or to private individuals; the method of determining the lues of policies will therefore be shown.

Let a sum *s* have been assured by an individual at the time he was

aged m years, and suppose his present age to be $m+n$, and tha
desirous of disposing of his policy, on which the annual premium i
due, but not paid; it is required to find an expression for deter
the value.

Let us call the annual premium payable on the policy, p_m; no
evident that if the policy were not subject to the payment of an a
premium, the value of it would be the single premium of assura
a life aged $m+n$, viz. (sA_{m+n}); but in consequence of the charge
annual premium on the policy the value will be reduced by a sum
to the present value of all the future premiums; that is, by the p
value of an annuity of £p_m on a life aged $m+n$, the first paym
which will be made immediately: the formula will therefore be

$$sA_{m+n}-p_m(1+a_{m+n}).$$

253. If the premium has been just paid, the value of the polic
evidently be increased by the amount of the premium, and the
will be

$$sA_{m+n}-p_m(1+a_{m+n})+p_m=sA_{m+n}-p_m.a_{m+n}.$$

Or the value may be found thus:

254. If we call p_{m+n} the annual premium which would be ch
on the policy at the present advanced age, and subtract from it p
shall have the sum which the purchaser will save every year i
payment of the premium, the present value of which will of cou
the value of the policy. When the premium is just due, and not
the form is $(p_{m+n}-p_m)(1+a_{m+n})$; this expression is equal to th
given above, for $sA_{m+n}=p_{m+n}(1+a_{m+n})$.

When the value is calculated at the same rate of interest and b
same table of mortality as the original premium, we may obtain a
in which the present values of the annuities are introduced,
pendent of the annual premiums; for by Art. 188, supposing th
assured, £1,

$$p_{m+n}=\frac{1}{1+a_{m+n}}-(1-r)$$

$$p_m=\frac{1}{1+a_m}-(1-r)$$

then $p_{m+n}-p_m=\frac{1}{1+a_{m+n}}-\frac{1}{1+a_m}$, and $(p_{m+n}-p_m)(1+a_{m+n})$

$$(1+a_{m+n})\left(\frac{1}{1+a_{m+n}}-\frac{1}{1+a_m}\right)=1-\frac{1+a_{m+n}}{1+a_m}.$$

Rule. When the premium is just due and not paid, add uni
the present value of the annuity on the life at the time of disposi
the policy, multiply it by the annual premium payable on the p
and subtract the product from the single premium which woul
charged for insuring the sum at the present age of the life in the p

Or, Take the difference between the premium which would be required at the present age and the premium charged in the policy, multiply it by unity added to the value of the annuity at the present age of the life in the policy.

Or, Increase by unity the value of an annuity of £1 at the present age, and divide the sum by unity added to the present value of an annuity of £1 at the age when the policy was effected, subtract the quotient from unity, and multiply the difference by the sum assured.

This rule applies only when the annual premium has been calculated at the same rate per cent, and by the same table of mortality as are used in valuing the policy.

Example. What is the value of a policy which was effected 5 years ago at the Equitable Insurance Office for £500, on a life then aged 55, at an annual premium of £26 11 3, supposing the premium just due and not paid, and that the value is to be calculated at the same rate as the premiums charged at that office, viz., by the Northampton, 3 per cent.?

$$\therefore A_{m+n}=500\{1-(1-r)(1+a_{60})\}=500(1-.0291262\times10.7774)=$$
$$500\times.686096=343.048$$
$$p_m(1+a_{m+n})=\quad 26.5625\times10.7774\quad \underline{286.273}$$
$$56.775=$$

£56 15 6, the value required.

Or thus:—The annual premium at 60 is £6.3661 per cent (Table 9,)

$$p_{m+n}=p_{60}=6.3661\times5=31.8305$$
$$p_m\ =p_{55}\qquad =\underline{26.5625}$$
$$(p_{m+n}-p_m)(1+a_{m+n})=5.2680\times10.7774=£56.774=56\ \ 15\ \ 6.$$

Or thus:

$$1-\frac{1+a_{m+n}}{1+a_m}=1-\frac{10.7774}{12.15}=1-.88703=.11297$$
$$.11297\times500=56.485=£56\ \ 9\ \ 9.$$

This value differs a little from the values found before, owing to the annual premium charged on the policy not being exactly correct according to the Northampton Table.

255. Suppose the premium, instead of being just due and not paid, to have been just paid, we must in that case add the amount of the premium to the value just found, to obtain the value.

£56 15 6+£26 11 3=£83 6 9.

Let us now find what will be the value of the same policy just before the premium becomes due, when it has been in force another year; that is, when it has been in force 6 years.

By Table 9,

$$A_{61}\times500=.694382\times500=347.191$$
$$p_m(1+a_{61})=26.5625\times10.4929\qquad=\underline{278.716}$$
$$68.475=£68\ \ 9\ \ 6.$$

256. From these examples it appears that the value at the beginning

of the year immediately after the payment of the premium is £83 6 9, and that at the end of the year just before the next payment becomes due, the value is reduced to £68 9 6, owing to the risk the office has incurred during the interval between the two periods.

If the value of the policy were required when the policy has been in force 5 years and 7 months, we must find the diminution in the value at the end of the year, and multiply it by that portion of the year which has lapsed since the payment of the premium, and subtract the result from the value at the beginning of the year, thus:

	83	6	9	83	6	9	
	68	9	6	8	13	5	
	14	17	3	74	13	4	value at the end of 5 years 7 months.
			7				
12)	104	0	9				
	8	13	5				

INCREASING AND DECREASING SCALES OF PREMIUMS.

257. Suppose the annual premium to increase or decrease a certain sum every t years, and at the end of v intervals of t years each, the premium to continue constant during the remainder of life. What annual premium should be required during the first t years?

Let $p=$ the annual premium required,
$q=$ the increase or decrease per £1 every t years.

$$A_m = p(1+a_m) \pm q\left(a_{(m)_{\rceil t-1}} + a_{(m)_{\rceil 2t-1}} + a_{(m)_{\rceil 3t-1}} + \ldots\ldots + a_{(m)_{\rceil vt-1}}\right)$$

by transposition and division,

$$p = \frac{A_m \mp q\left(a_{(m)_{\rceil t-1}} + a_{(m)_{\rceil 2t-1}} + a_{(m)_{\rceil 3t-1}} + \ldots\ldots + a_{(m)_{\rceil vt-1}}\right)}{1+a_m}$$

By substitution in the first equation,

$$\frac{\mathrm{M}_m}{\mathrm{D}_m} = p\cdot\frac{\mathrm{N}_{m-1}}{\mathrm{D}_m} \pm q\left(\frac{\mathrm{N}_{m+t-1} + \mathrm{N}_{m+2t-1} + \mathrm{N}_{m+3t-1} + \ldots\ldots + \mathrm{N}_{m+vt-1}}{\mathrm{D}_m}\right),$$

from which we obtain

$$p = \frac{\mathrm{M}_m \mp q\,(\mathrm{N}_{m+t-1} + \mathrm{N}_{m+2t-1} + \mathrm{N}_{m+3t-1} + \ldots\ldots + \mathrm{N}_{m+vt-1})}{\mathrm{N}_{m-1}}.$$

Example. What annual premium should be required during the first 5 years to insure £100 on a life aged 31, the annual premium to increase 4*s*. every 5 years, and remain constant at the end of 20 years? (Carlisle 4 per cent.)

$$t=5 \qquad v=4 \qquad q=\frac{.2}{100}=.002$$

$$\begin{array}{rr} N_{m+t-1} = N_{35} = & 21797.0406 \\ N_{m+2t-1} = N_{40} = & 15933.8350 \\ N_{m+3t-1} = N_{45} = & 11414.2176 \\ N_{m+4t-1} = N_{50} = & \underline{7962.2358} \\ & 57107.3290 \\ & \underline{.002} \\ & 114.214658 \end{array}$$

$$\frac{414.0198}{N_{30}=29314.89} = \begin{array}{l} .01412 \\ \underline{\quad 100} \\ 1.412 \end{array} = £1\ 8\ 3.$$

nstead of the premiums being reduced or increased by a fixed may be reduced or increased arbitrarily, provided that in the icreasing premiums those in the first instance be sufficient to risk for the term during which they are payable; *i. e., not the annual premium for a temporary insurance for the same*

n the case of increasing premiums, the annual premium for nterval should be more than the annual premium for a risk to ined at the expiration of that term, as the party assured will advantage over the office of continuing or discontinuing the s own option.

f the annual premium for the first t years be p, for the second $_{,}$, for the third $p_{,,}$, &c., and the premium is to be constant 'ears, we shall have if we call this last q,

$$=p(1+a_{(m)\overline{t-1}|})+a_{(m)\,t|\overline{t-1}}\,p_{,}+a_{(m)\,2t|\overline{t-1}}\,p_{,,}+\dots+q\,a_{(m)\,vt|\overline{t-1}},$$

ch we obtain by transposition and division

$$=\frac{A_m-\left\{p(1+a_{(m)})_{\overline{t-1}|}+a_{(m)\,t|\overline{t-1}}\,p_{,}+a_{(m)\,2t|\overline{t-1}}\,p_{,,}+\&c.\right\}}{a_{(m)\,vt|\overline{t-1}}},$$

oting the value of an annuity for t years, to commence at the

n of vt years.

xpression above for A_m may be thus written,

$$\frac{M_m}{D_m}=$$

$$\frac{N_{m+t-1})+p_{,}(N_{m+t-1}-N_{m+2t-1})+p_{,,}(N_{m+2t-1}-N_{m+3t-1})+\dots+q.N_{m+vt-1}}{D_m},$$

ich we obtain

$$q=$$

$$\frac{N_{m-1}-N_{m+t-1})+p_{,}(N_{m+t-1}-N_{m+2t-1})+p_{,,}(N_{m+2t-1}-N_{m+3t-1})+\&c.\}}{N_{m+vt-1}}$$

To find the value of a policy payable by increasing or decreasiums:

Let $p =$ the premium for £1 for the first t years, $p_{\prime}$ for the next $t_{\prime}$ years, $p_{\prime\prime}$ for the succeeding $t_{\prime\prime}$ years, &c., and call the last premium commencing after the payment of v premiums P; then, supposing the last premium to have been just paid, and t more premiums of p each to be payable before any variation takes place, and the age at the time of valuation to be m, the present value of all the future premiums will be

$$p.a_{(m)\,\overline{t}|} + p_{\prime}.a_{(m)\,\overline{t_{\prime}}|t} + p_{\prime\prime}.a_{(m)\,\overline{t_{\prime\prime}}|t+t_{\prime}} + \ldots\ldots + \text{P}.a_{(m)\,\rceil v},$$

which subtracted from the single premium for the assurance at the present age (m), will give the value of the policy, viz.,

$$A_m' - \left(p.a_{(m)\,\overline{t}|} + p_{\prime}\,a_{(m)\,\overline{t_{\prime}}|t} + p_{\prime\prime}.a_{(m)\,\overline{t_{\prime\prime}}|t+t_{\prime}} + \ldots\ldots + \text{P}a_{(m)\,\rceil v}\right),$$

which may be thus written:

$$\frac{\text{M}_m - \{p(\text{N}_m - \text{N}_{m+t}) + p_{\prime}(\text{N}_{m+t} - \text{N}_{m+t+t_{\prime}}) + p_{\prime\prime}(\text{N}_{m+t+t_{\prime}} - \text{N}_{m+t+t_{\prime}+t_{\prime\prime}}) + .. + \text{P.N}_{m+v}\}}{\text{D}_m}$$

If the last premium be just due and not paid, *i.e.*, if there be $(t+1)$ premiums of p each to be paid (one of them immediately), the value will be

$$A_m - \{p(1 + a_{(m)\,\overline{t}|}) + p_{\prime}a_{(m)\,\overline{t_{\prime}}|t} + p_{\prime\prime}.a_{(m)\,\overline{t_{\prime\prime}}|t+t_{\prime}} + \ldots\ldots + \text{P}.a_{(m)\,\rceil v}\},$$

which may be thus written:

$$\frac{\text{M}_m - p(\text{N}_{m-1} - \text{N}_{m+t}) + p_{\prime}(\text{N}_{m+t} - \text{N}_{m+t+t_{\prime}}) + p_{\prime\prime}(\text{N}_{m+t+t_{\prime}} - \text{N}_{m+t+t_{\prime}+t_{\prime\prime}}) + \ldots + \text{P.N}_{m+}}{\text{D}_m}$$

INCREASING AND DECREASING ANNUITIES.

262. To find the value of an increasing annuity,

Let there be n perpetuities of £1 per annum, the first to be entere on immediately, the second at the end of one year, the third at the en of two years, and so on to the nth, which is to be *entered upon* at tl end of $n-1$ years. By Art. 56, the present value of the first pe petuity is $\frac{1}{i}$, of the second, $\frac{(1+i)^{-1}}{i}$, of the third, $\frac{(1+i)^{-2}}{i}$, &c., ar of the nth, $\frac{(1+i)^{-(n-1)}}{i}$; the present value of the n perpetuities w therefore be

$$\frac{1 + (1+i)^{-1} + (1+i)^{-2} + (1+i)^{-3} + \ldots.(1+i)^{-(n-1)}}{i};$$

the numerator of this expression is unity, added to the present value £1 per annum for $n - 1$ years, (Art. 49); the value of the series therefore

$$\frac{1}{i}\left\{1 + \frac{1-(1+i)^{-(n-1)}}{i}\right\} = \frac{1}{i}\left\{\frac{(1+i) - (1+i)^{-(n-1)}}{i}\right\};$$

if from this we subtract the present value of n perpetuities, each of per annum deferred n years, we shall have remaining the value of annuity for n years, commencing with £1, and increasing £1 each year, viz.:

$$\frac{1}{i}\left\{\frac{1+i-(1+i)^{-(n-1)}}{i}\right\}-\frac{n(1+i)^{-n}}{i}=\frac{1}{i}\left\{\frac{1+i-(1+i)^{-(n-1)}}{i}-n(1+i)^{-n}\right\}$$

$$\therefore\frac{p}{i}\left\{\frac{1+i-(1+i)^{-(n-1)}}{i}-n(1+i)^{-n}\right\}=$$ the value of an annuity for n years, whereof the first payment is £p, the second £$2p$, the third £$3p$, increasing £p each payment until the expiration of the annuity.

263. If the first payment be £a, and the future payments be increased by £p each year, we must add to the value just found the present value of an annuity of $a-p$ pounds for n years:

$$(a-p)\frac{1-(1+i)^{-n}}{i}+\frac{p}{i}\left\{\frac{1+i-(1+i)^{-(n-1)}}{i}-n(1+i)^{-n}\right\}=$$

$$a.\frac{1-(1+i)^{-n}}{i}+p.\frac{(1+i)^{-n}}{i}+\frac{p}{i}\left\{\frac{1-(1+i)^{-(n-1)}}{i}-n(1+i)^{-n}\right\}=$$

$$a.\frac{1-(1+i)^{-n}}{i}+\frac{ip(1+i)^{-n}+p\{1-(1+i)^{-(n-1)}-in(1+i)^{-n}\}}{i^2}=$$

$$a.\frac{1-(1+i)^{-n}}{i}+p\frac{\{(i-in)(1+i)^{-n}+1-(1+i)(1+i)^{-n}\}}{i^2}=$$

$$a.\frac{1-(1+i)^{-n}}{i}+p\left\{\frac{1-(1+in)(1+i)^{-n}}{i^2}\right\}.$$

If p be changed in sign, the *decreasing* annuity is

$$a.\frac{1-(1+i)^{-n}}{i}-p.\frac{1-(1+in)(1+i)^{-n}}{i^2}.$$

Example. What is the present value of an annuity for the next 10 years commencing at £20, and increasing £10 each year, at 4 per cent compound interest?

$$\begin{array}{rr} & 1. \\ 1.04^{-10}= & .67556417 \\ \hline .04) & .32443583 \\ \hline & 8.110896 \\ & 02 \\ \hline & 162.218 \end{array}$$

$$\begin{array}{rr} & .04 \\ & .10 \\ \hline in= & .40 \\ & 1 \\ \hline & 1.4=1+in \end{array}$$

$$\begin{array}{rr} & .67556417 \\ & 4.1 \\ \hline & 67556417 \\ & 27022567 \\ \hline (1+in)(1+i)^{-n}= & .94578984 \\ & 1. \\ \hline 1-(1+in)(1+i)^{-n}= & .05421016 \\ & 10 \\ \hline .04) & .5421016 \\ \hline .04) & 13.55254 \\ \hline & 338.813 \end{array}$$

162.218+338.813=501.031=£501 0 8.

264. Let a person aged m be entitled to n annuities of £1 each payable until his decease, the first to be entered upon immediately, the second at the end of one year, the third at the end of two years, and so on to the nth, which will be entered upon at the expiration of $n-1$ years; the present value of the first will be $\frac{N_m}{D_m}$, the present value of the second $\frac{N_{m+1}}{D_m}$, the present value of the nth, $\frac{N_{m+n-1}}{D_m}$; the value of the n annuities will be

$$\frac{N_m+N_{m+1}+N_{m+2}+N_{m+3}+\ldots\ldots N_{m+n-1}}{D_m}.$$

Since column S, opposite each year of age gives the sum of the numbers in column N at each age and at all ages above—if, therefore, from the number in column S opposite to the age m we subtract the number in the same column opposite the age $m+n$, we have the sum of the first n terms in column N; the expression just obtained is therefore

$$\frac{S_m-S_{m+n}}{D_m}.$$

If all payments cease at the end of n years from this time, the present value of each annuity will be diminished by the present value of a life annuity to be entered upon at the expiration of n years, viz. $\frac{N_{m+n}}{D_m}$; subtracting $\frac{n.N_{m+n}}{D_m}$ from $\frac{S_m-S_{m+n}}{D_m}$, we have

$$\frac{S_m-S_{m+n}-n.N_{m+n}}{D_m},$$ the present value of a annuity for n years, the first payment being £1, and increasing by £1 annually until the end of the term.

If we multiply by p, we have

$$\frac{p\,(S_m-S_{m+n}-n\,N_{m+n})}{D_m},$$ the present value of a annuity for n years, commencing at £p, and increasing £p annually.

If the first payment be £a, and the future payments be increase annually by £p, we must add the present value of an annuity of $a-$ pounds for n years, viz.,

$$\frac{(a-p)(N_m-N_{m+n})}{D_m},$$ which gives

$$\frac{(a-p)(N_m-N_{m+n})+p(S_m-S_{m+n}-n.N_{m+n})}{D_m}.$$

265. If instead of p we take $-p$, the expression becomes

$$\frac{(a+p)(N_m-N_{m+n})-p(S_m-S_{m+n}-n.N_{m+n})}{D_m},$$

the present value of an annuity for n years, commencing at £a, and diminishing £p annually, until the end of the term. In this case p must not exceed $\frac{a}{n-1}$, as the annuity would ultimately become negative.

If t be not less than the oldest age completed by any life, according to the Tables N_{m+n} and S_{m+n}, each $=0$, and the present value of an annuity commencing at £a and increasing £p annually to the end of life, will be

$$\frac{(a-p)\,N_m + p.S_m}{D_m}.$$

If in this expression $a=p$ we obtain $\frac{p.S_m}{D_m}=$ the present value of an annuity commencing at £p, and increasing £p annually to the end of life.

In the expression above, if p be taken negatively we have $\frac{(a+p)\,N_m - p.S_m}{D_m}$ the present value of an annuity commencing at £a, and decreasing £p each year to the end of life.

Required the present value of an annuity for 10 years on a life aged 50, commencing at £20, and increasing £20 annually. (Northampton 3 per cent.)

$$\frac{p\,(S_m - S_{m+n} - n.N_{m+n})}{D_m} = \frac{20\,(S_{50} - S_{60} - 10.N_{60})}{D_{50}}.$$

```
                                     S₅₀=85391.56
                                         61878.86
                                         23512.70
                                               20
                           D₅₀=651.702)47025.400(721. 578=£721 11 7
                                        4561914
Table 6, N₆₀=3382.152                    140626
                   10                    130340
             33821.52                     10286
       S₆₀=  28057.34                      3769
             61878.86                      3259
                                            510
                                            456
                                             54
```

Required the present value of an annuity for 10 years on a life aged 30, commencing at £50, and increasing £4 each year. (Northampton 3 per cent.)

$$\frac{(a-p)(\mathrm{N}_m-\mathrm{N}_{m+n})+p(\mathrm{S}_m-\mathrm{S}_{m+n}-n.\mathrm{N}_{m+n})}{\mathrm{D}_m}=$$

$$\frac{(50-4)\,(\mathrm{N}_{30}-\mathrm{N}_{40})+4\,(\mathrm{S}_{30}-\mathrm{S}_{40}-10\,\mathrm{N}_{40})}{\mathrm{D}_{30}}$$

$\mathrm{N}_{30}=30570.053$ $\qquad$ $\mathrm{N}_{40}=16545.194$

$\mathrm{N}_{40}=16545.194$ $\qquad$ 10

14024.859 $\qquad$ 165451.94

64 $=(a-p)$ inverted $\qquad$ $\mathrm{S}_{40}=$ 209130.1

56099436 $\qquad$ 374582.04

8414915

645143.51

$\mathrm{S}_{30}=$ 446138.7

374582.0

71556.7

4

$p(\mathrm{S}_{30}-\mathrm{S}_{40}-10.\mathrm{N}_{40})=$ 286226.8

645143.5

$\mathrm{D}_{30}=1806.562$)931370.3(515.55=£515 11 0

9032810

280893

100237

90328

9909

9033

876

Required the present value of an annuity for 10 years on a life 30, commencing at £50, and decreasing £4 each year. (Northar 3 per cent.)

$$\frac{(a+p)(\mathrm{N}_m-\mathrm{N}_{m+n})-p\,(\mathrm{S}_m-\mathrm{S}_{m+n}-n.\mathrm{N}_{m+n})}{\mathrm{D}_m}=$$

$$\frac{54\,(\mathrm{N}_{30}-\mathrm{N}_{40})-4\,(\mathrm{S}_{30}-\mathrm{S}_{40}-10\,\mathrm{N}_{40})}{\mathrm{D}_{30}}$$

By last example, $\mathrm{N}_{30}-\mathrm{N}_{40}=$ 14024.859

45 $=(a+p)$ inverted

70124295

5609944

757342.39

By do. $p(\mathrm{S}_{30}-\mathrm{S}_{40}-10.\mathrm{N}_{40})=$ 286226.8

$\mathrm{D}_{30}=1806.562$)471115.6(260.780=£260 15 7

3613124

1098032

1083937

14095

12646

1449

1445

Required the present value of an annuity on a life aged 30, commencing at £40 and increasing £5 each year until death. (Northampton 3 per cent.)

$$\frac{(a-p)\,N_m+p\,S_m}{D_m}=\frac{(40-5)\,N_{30}+5.S_{30}}{D_{30}}$$

$N_{30}=$ 30570.053
53
91710159
15285027
1069951.86

$S_{30}=$ 446138.7
5
2230693.5
1069951.9
$D_{30}=$ 1806.562)3300645.4(1827.031=
1806562 £1827 0 8
14940834
14452496
488338
361312
127026
126459
567
542
25

Required the present value of an annuity on a life aged 70, commencing at £200, and *decreasing* £5 each year until death. (Northampton 3 per cent.)

$$\frac{(a+p)\,N_m-p.S_m}{D_m}=\frac{205\,N_{70}-5.S_{70}}{D_{70}}$$

$N_{70}=$ 1047.824
502
2095648
52391
214803.9
31321.5
$D_{70}=$ 155.598)183482.4(1179.209=£1179 4 2
155598
27884 4
123246
108919
14327
14003
324
311
13

$S_{70}=$ 6264.30
5
31321.50

266. The columns M and R being constructed for assurances manner similar to N and S for annuities, if in the formula of Art. we substitute M and R, for N and S we obtain

$$\frac{(a-p)(\mathrm{M}_m-\mathrm{M}_{m+n})+p(\mathrm{R}_m-\mathrm{R}_{m+n}-n.\mathrm{M}_{m+n})}{\mathrm{D}_m}= \text{the single prem}$$

for an assurance on a life aged *m* for the term of *n* years, commen at £*a* and increasing £*p* each year during the term of the assurance

Similarly the formula of Art. 265 will become

$$\frac{(a+p)(\mathrm{M}_m-\mathrm{M}_{m+n})-p(\mathrm{R}_m-\mathrm{R}_{m+n}-n.\mathrm{M}_{m+n})}{\mathrm{D}_m}= \text{the single prem}$$

for an assurance for *n* years ou a life aged *m*, commencing at £*a* diminishing £*p* each year during the term of the assurance.

If we substitute in the last two expressions $\mathrm{N}_{m-1}-\mathrm{N}_{n+n-1}$ for D, the deuominator, we shall have the expression for the annual premi (Art. 40.)

If *n* be not less than the oldest age in the table, M_{m+n} and R_{m+n} disappear, and the expression for an increasing assurance will bec

$$\frac{(a-p)\mathrm{M}_m+p.\mathrm{R}_m}{\mathrm{D}_m}= \text{the single premium for an assurance on a}$$

aged *m*, commencing at £*a* and *increasing* £*p* each year until period of decease; and $\frac{(a+p)\mathrm{M}_m-p.\mathrm{R}_m}{\mathrm{D}_m}=$ the single premium an assurance on a life aged *m*, commencing at £*a* and decreasing each year until the time of death.

The annual premium in the last two cases will be expressed by stituting N_{m-1} for D_m.

Required the single and annual premium to effect an assurance life aged 30 for the term of 7 years, commencing at £100, and *incr ing* £50 each year. (Northampton 3 per cent.)

$$\frac{(a-p)(\mathrm{M}_m-\mathrm{M}_{m+n})+p(\mathrm{R}_m-\mathrm{R}_{m+n}-n.\mathrm{M}_{m+n})}{\mathrm{D}_m}=$$

$$\frac{50(\mathrm{M}_{30}-\mathrm{M}_{37})+50(\mathrm{R}_{30}-\mathrm{R}_{37}-7\,\mathrm{M}_{37})}{\mathrm{D}_{30}}$$

$$\begin{array}{rr}
\mathrm{M}_{30}=863.5541 & \mathrm{M}_{37}=671.0445 \\
\mathrm{M}_{37}=671.0445 & 7 \\
\hline
192.5096 & 4697.3115 \\
50 & \mathrm{R}_{37}=12994.68 \\
\hline
9625.4800 & 17691.99
\end{array}$$

$18439.29-17691.99= \quad 747.30 = R_{30}-R_{37}-7.M_{37}$
50
37365.00=
9625.48
$D_{30}=1806.562)46990.48(26.011=$£26 0 3=
3613124 single premium
1085924
1083937
1987
1807
180

$N_{29}=32376.615$
$N_{36}=21354.988$
11021.627) 46990.48(4.263=£4 5 3=
4408651 annual premium
290397
220432
69965
66130
3835

Required the single and annual premium for an assurance for 7 years on a life aged 30, commencing at £450, and *decreasing* £50 each year. (Northampton 3 per cent.)

$$\frac{(a+p)\,(M_m-M_{m+n})-p\,(R_m-R_{m+n}-n.M_{m+n})}{D_m}=$$

$$\frac{500(M_{30}-M_{37})-50(R_{30}-R_{37}-7.M_{37})}{D_{30}}$$

By last Example, $M_{30}-M_{37}=$ 192.5096
500
96254.80
do. $50\,(R_{30}-R_{37}-7.M_{37})=$ 37365.00
1806.562)58889.80(32.597=£32 11 11=
5419686 single premium
469294
361312
107982
90328
17654
16259
1395

$N_{29}-N_{36}=11021.627)58889.80(5.343=$ £5 6 10
5510814 annual premium
378166
330649
47517
44086
3431

Required the single and annual premium to assure a life a
for the whole term of existence, commencing at £100, and inc
£10 each year.

$$\frac{(a-p)M_m+p.R_m}{D_m}=\frac{90\,M_{60}+10\,R_{60}}{D_{60}}$$

$M_{60}=\ 237.3317$
90
21359.853
$10.R_{60}=28022.81$
$D_{60}=345.916)49382.66\ (142.759=$ £142 15
345916
1479106
1383664
95442
69183
26259
24214
2045
1730
315

$N_{59}=3728.068)49382.66(13.246=$ £13 4 11 =
3728068 annual premiu
1210198
1118420
91778
74561
17217
14912
2305
2237
68

Required the single and annual premium to assure a life a commencing at £1000, and diminishing £20 each year until death. (Northampton 3 per cent.)

$$\frac{(a+p)\,M_m-p.R_m}{D_m}=\frac{1020\,M_{60}-20.R_{60}}{D_{60}}$$

```
         M₆₀=237.3317      R₆₀= 2802.281
               0201                   20
            2373317            56045.62
              47466
           242078.3
            56045.6
D₆₀=345.916)186032.7(537.798 =£537 16 0= single
            1729580                         premium
             130747
             103775
              26972
              24214
               2758
               2421
                337
                311
                 26

N₅₉=3728.068)186032.7(49.900=£49 18 0 = annual prem.
            1491227
             369100
             335525
              33575
              33552
                 23
```

267. Required the annual premium to secure a sum at the end of *n* years, should a life now aged *m* live so long, or the return of all the premiums in case he should die before that time.

Suppose £1 the sum to be secured, and *p* the annual premium required; the risk in addition to that of paying the £1, will be an assurance for *n* years, commencing at £*p* and increasing £*p* each year, the annual premium for which (Art. 266,) added to the annual premium to secure £1 will be

$$\frac{p\,(R_m-R_{m+n}-n.M_{m+n})+D_{m+n}}{N_{m-1}-N_{m+n-1}};$$

and by the conditions this expression must be equal to *p*, viz.,

$$\frac{p\,(R_m-R_{m+n}-n.M_{m+n})+D_{m+n}}{N_{m-1}-N_{m+n-1}}=p.$$

$$p\,(R_m - R_{m+n} - n\,M_{m+n}) + D_{m+n} = p\,(N_{m-1} - N_{m+n-1})$$

$$p\,(N_{m-1} - N_{m+n-1} - R_m + R_{m+n} + n\,M_{m+n}) = D_{m+n}$$

$$\therefore p = \frac{D_{m+n}}{N_{m-1} + R_{m+n} + n\,M_{m+n} - N_{m+n-1} - R_m}.$$

Example. Required the annual premium to secure £100 at the end of 12 years to a child now aged 9, should he then be alive, the premiums to be returned in the event of his dying before that time (Northampton 3 per cent.)

$M_{m+n} = M_{21} = 1177.460$ $\qquad N_{m+n-1} = N_{20} = 52960.516$

$12 = n$ $\qquad R_m = R_9 = 44580.59$

$nM_{m+n} = 14129.52$ $\qquad 97541.11$

$N_{m-1} = 95873.84 = N_8$

$R_{m+n} = R_{21} = 27719.02$

137722.38

97541.11

$40181.27\,)\,271.9999\,(.6769$

$2410876 \qquad 100$

$309123 \qquad 6.769 = £6\ 15\ 5$

281268

$.27855$

24109

3746

268. The annual premium for securing an annuity of £1 to be entere upon at the expiration of n years, and to continue during the remaini period of existence of a life now aged m, is $\frac{N_{m+n}}{N_{m-1} - N_{m+n-1}}$; if, ther fore, we substitute N_{m+n} for D_{m+n} in the last formula, we shall have

$$p = \frac{N_{m+n}}{N_{m-1} + R_{m+n} + n.M_{m+n} - N_{m+n-1} - R_m} = \text{the annual premium}$$

secure an annuity of £1 on a life now aged m, to be entered upon at th expiration of n years, the annual premium to be returned in case th said life should fail within the n years.

Example. What annual premium should be charged to a persor now aged 40, to secure to him an annuity of £40 to be entered upon a the expiration of 20 years, the premiums to be returned in the even of his dying before that time? (Northampton 3 per cent.)

$$
\begin{array}{rrl}
\mathrm{M}_{m+n}=\mathrm{M}_{60}= & 237.3317 & \qquad \mathrm{N}_{m+n-1}=\mathrm{N}_{59}= 3728.068 \\
 & 20 & \qquad \mathrm{R}_{m}=\mathrm{R}_{40}=11054.01 \\
\hline
n.\mathrm{M}_{m+n}= & 4746.634 & \qquad 14782.08 \\
\mathrm{N}_{m-1}=\mathrm{N}_{39}= & 17659.528 & \\
\mathrm{R}_{m+n}=\mathrm{R}_{60}= & 2802.281 & \\
\hline
 & 25208.443 & \\
 & 14782.08 & \\
\hline
 & 10426.36 &)3382.152\ (\ .3243
\end{array}
$$

$$
\begin{array}{rr}
3127908 & 40 \\
\hline
254244 & 12.972=£12\ 19\ 5 \\
208527 & \\
\hline
45717 & \\
41705 & \\
\hline
4012 & \\
3128 & \\
\hline
.884 &
\end{array}
$$

269. If p be the annual premium to insure £a and a return of the premiums, the assurance is for $a+p$ in the first instance, and an increase of £p each year during life: we have therefore by Art. 266,

$$\frac{a.\mathrm{M}_m+p.\mathrm{R}_m}{\mathrm{N}_{m-1}}=p,$$

$$a.\mathrm{M}_m+p.\mathrm{R}_m=p.\mathrm{N}_{m-1},$$

by transposing, $\quad p(\mathrm{N}_{m-1}-\mathrm{R}_m)=a.\mathrm{M}_m,$

whence, $p=\dfrac{a.\mathrm{M}_m}{\mathrm{N}_{m-1}-\mathrm{R}_m}=$ the annual premium for the assurance of £a and a return of all the annual premiums.

Required the annual premium for the assurance of £100, to be paid on the death of a person aged 40, with a return of all the premiums paid on the policy. (Northampton 3 per cent.)

$$
\begin{array}{rrl}
\mathrm{N}_{m-1}=\mathrm{N}_{39}=17659.528 & \mathrm{M}_{40}= 599.9792 & \\
\mathrm{R}_{m}=\mathrm{R}_{40}=11054.01 & 100 & \\
\hline
6605.52 &)\ 59997.92 & (9.083=£9\ 1\ 8 \\
 & 5944968 & \\
\hline
 & 54824 & \\
 & 52844 & \\
\hline
 & 1980 &
\end{array}
$$

270. Suppose n payments, the first whereof is £1 paid immediately, and the remaining payments each diminished by the nth part of £1 to be paid at the end of each successive year, we shall then have for the present value, £1 the sum paid down to be added to the present value of an annuity for $n-1$ years, commencing with £$\dfrac{n-1}{n}$, and

diminishing annually by £$\frac{1}{n}$; by the formula of Art. 265, tl becomes

$$1+\frac{\left\{\left(\frac{n-1}{n}+\frac{1}{n}\right)(N_m-N_{m+n-1})-\frac{1}{n}(S-S_{m+n-1}-(n-1)\,N_{m+n-1})\right\}}{D_m};$$

but $\frac{n-1}{n}+\frac{1}{n}=1$, the expression will therefore become

$$\frac{D_m+N_m-N_{m+n-1}-\frac{1}{n}(S_m-S_{m+n-1}+N_{m+n-1})+N_{m+n-1}}{D_m}=$$

$$\frac{D_m+N_m-\frac{1}{n}\{S_m-(S_{m+n-1}-N_{m+n-1})\}}{D_m}=$$

$$\frac{N_{m-1}-\frac{1}{n}(S_m-S_{m+n})}{D_m},$$

since, by the construction of the tables, $D_m+N_m=N_{m-1}$, a $S_{m+n-1}-N_{m+n-1}=S_{m+n}$; and since $\frac{M_m}{D_m}$ is the single premium for t assurance of £1, by dividing by the expression just found, we ha $\frac{M_m}{N_{m-1}-\frac{1}{n}(S_m-S_{m+n})}$, the first premium to be required for the assu ance of £1 on the life, supposing the subsequent payments to be s cessively reduced by the *n*th part of the first premium, until they al gether cease after *n* payments.

What annual premium should be charged for the assurance of £1 on a life aged 40, the premiums being successively reduced by the te part of the first premium, and ceasing altogether after the tenth p ment? (Northampton 3 per cent.)

$$\begin{array}{llll}
S_m = S_{40} = 209130.1 & N_{m-1} = N_{39} = 17659.528 & & \\
S_{m+n} = S_{50} = \underline{\ 85391.6} & \underline{12373.85} & & \\
\quad 10)\,\underline{123738.5} & 5285.68\,)\,599.9792(.11352 = & & \\
\quad\quad 12373.85 & \quad 528568 & £11 & \\
 & \quad \overline{714112} & \text{per ce} & \\
 & \quad \underline{528568} & & \\
 & \quad 185544 & & \\
 & \quad \underline{158570} & & \\
 & \quad\ \ 26974 & & \\
 & \quad\ \ \underline{26428} & & \\
 & \quad\quad\ 546 & &
\end{array}$$

RECAPITULATION OF FORMULÆ.

NOTATION.

$a_m =$ present value of £1 per annum on a life aged *m*.

$a_{m, m_1, m_2, \&c.} =$ do. on the joint existence of the lives aged m, m_1, m_2, &c.

$a_{\overline{(m, m_1, m_2, \&c.)}}^{\;v} =$ do. on the joint existence of the last *v* survivors of the lives aged m, m_1, m_2, &c.

$a_{(m)_{\overline{n}|}} =$ present value of £1 per annum for the next *n* years, subject to the existence of a life aged *m*.

$a_{(m, m_1, m_2, \&c.)_{\overline{n}|}} =$ do. subject to the joint existence of the lives aged m, m_1, m_2, &c.

$a_{\overline{(m, m_1, m_2, \&c.)}_{\overline{n}|}}^{\;v} =$ do. subject to the joint existence of the last *v* survivors of the lives aged m, m_1, m_2, &c.

$a_{(m)_{|n}} =$ present value of £1 per annum to be entered upon at the expiration of *n* years, and afterwards to continue so long as a life now aged *m* shall survive that period.

$a_{(m, m_1, m_2, \&c.)_{|n}} =$ do. dependent on the joint existence of the lives now aged m, m_1, m_2, &c.

$a_{\overline{(m, m_1, m_2, \&c.)}_{|n}}^{\;v} =$ do. on the joint existence of the last *v* survivors of the lives aged m, m_1, m_2, &c.

A substituted for *a* in each of the above cases, denotes the present value of an assurance of £1 for a similar term.

$A_{\underset{(1)}{m}, m_1} =$ present value of an assurance of £1 on the failure of a certain life aged *m*, provided another aged m_1 survive him.

$A_{\underset{(2)}{m}, m_1} =$ present value of an assurance of £1 on the death of a party aged *m*, provided another aged m_1 shall have died previously.

$A_{(\underset{(1)}{m}, m_1)_{\overline{n}|}} =$ present value of an assurance of £1 payable at the end of the year when a life aged *m* shall fail, provided that event happen within the next *n* years, and another life aged m_1 survive him.

$A_{(\underset{(1)}{m}, m_1)_{|n}} =$ do. provided the event happen after the next *n* years.

$d_m =$ the number dying in the *m*th year of age.

$e_m =$ average number of years a life aged *m* survives, called the *expectation*.

$l_m =$ number of living at the age *m*.

$p_{m, n} = \frac{l_{m+n}}{l_m} =$ probability of a life aged *m* living *n* years.

$p_{(m,\,m_1,\,m_2,\,\&c.),\,n} = \frac{l_{m+n}\cdot l_{m_1+n}\cdot l_{m_2+n}\ \&c.}{l_m\cdot l_{m_1}\cdot l_{m_2}\ \&c.}$ = the probability of any nu
of lives aged m, m_1, m_2, &c. *jointly* surviv
years.

$p^{\,v}_{\overline{(m,\,m_1,\,m_2,\,\&c.)},\,n}$ = the probability of v or more of the lives aged m,
m_2 &c., surviving n years.

$\Sigma q^{(1)}_{m,\,m_1}$ = probability of a life aged m dying before an
aged m_1.

$\Sigma_{t|}\, q^{(1)}_{m,\,m_1}$ = probability of a life aged m dying before an
aged m_1 within the next t years.

r^n = the present value of £1 due n years hence.

Σ prefixed to an expression denotes the sum o
values of the variable quantity from the pr
ages to the extreme tabular period of existenc

$\Sigma_{t|}$ = the sum of the first t values.

$\Sigma_{|t}$ = sum of all after the first t values.

D_m, N_m, M_m, R_m, S_m, represent the number opposite age m ir
columns so marked.

FORMULÆ.

TWO JOINT LIVES AND THE SURVIVOR (aged m, m_1).

$a_m + a_{m_1} - a_{m,\,m_1}$ = value of an annuity for the above period.

THREE LIVES:

The value of an annuity payable so long as there shall be at *two* out of *three* lives in existence aged m, m_1, m_2, &c., is

$$a_{m,\,m_1} + a_{m,\,m_2} + a_{m_1,\,m_2} - 2a_{m,\,m_1,\,m_2}\,.$$

The value of an annuity payable until the death of the survivor i

$$a_m + a_{m_1} + a_{m_2} - a_{m,\,m_1} - a_{m,\,m_2} - a_{m_1,\,m_2} + a_{m,\,m_1,\,m_2}\,.$$

TEMPORARY ANNUITIES.

The present value of an annuity for n years on a life aged m is

$$a_{(m)_{\overline{n|}}} = \frac{N_m - N_{m+n}}{D_m}, \text{ or } a_m - \frac{l_{m+n}}{l_m}\, r^n . a_{m+n}\,.$$

The present value of an annuity for n years on *two joint lives* m and m_1, is

$$a_{(m,\,m_1)_{\overline{n|}}} = a_{m,\,m_1} - \frac{l_{m+n}}{l_m} . \frac{l_{m_1+n}}{l_{m_1}}\, r^n . a_{m+n,\,m_1+n}\,.$$

The present value of an annuity for n years on the survivor of lives aged m and m_1 is

$$a_{(m)_{\overline{n|}}} + a_{(m_1)_{\overline{n|}}} - a_{(m,\,m_1)_{\overline{n|}}}\,.$$

DEFERRED ANNUITIES.

The value of an annuity to be entered upon at the expiration of n years, and continued until the failure of the existence of a life now aged m, is

$$a_{(m)_{|n}} = \frac{N_{m+n}}{D_m}, \quad \text{or} \quad \frac{l_{m+n}}{l_m} r^n . a_{m+n} .$$

The annual premium payable in n payments, the first to be made immediately, is

$$\frac{N_{m+n}}{N_{m-1} - N_{m+n-1}}, \quad \text{or} \quad \frac{\frac{l_{m+n}}{l_m} r^n . a_{m+n}}{1 - \frac{l_{m+n}}{l_m} . r^n + a_m - \frac{l_{m+n}}{l_m} . r^n . a_{m+n}} .$$

The single premium for an annuity on *two joint lives* aged m and m_1, to be entered upon at the expiration of n years is

$$a_{(m,\, m_1)_{|n}} = \frac{l_{m+n}}{l_m} . \frac{l_{m_1+n}}{l_{m_1}} r^n . a_{m+n,\, m_1+n} ,$$

which, divided by

$$1 - \frac{l_{m+n}}{l_m} . \frac{l_{m_1+n}}{l_{m_1}} . r^n + a_{m,\, m_1} - \frac{l_{m+n}}{l_m} . \frac{l_{m_1+n}}{l_{m_1}} . a_{m+n,\, m_1+n} ,$$

will give the annual premium.

The single premium for an annuity to be entered upon at the expiration of n years, and then to continue until the death of the last survivor is

$$a_{(m)_{|n}} + a_{(m_1)_{|n}} - a_{(m,\, m_1)_{|n}} .$$

DEFERRED TEMPORARY ANNUITIES.

The single premium for an annuity to be entered upon at the expiration of d years, and then to continue n years, subject to the existence of a life now aged m, is

$$\frac{l_{m+d} . r^d . a_{m+d} - l_{m+d+n} . r^{d+n} . a_{m+d+n}}{l_m}, \quad \text{or} \quad \frac{N_{m+d} - N_{m+d+n}}{D_m} .$$

The annual premium payable d years at the beginning of each year, is

$$\frac{N_{m+d} - N_{m+d+n}}{N_{m-1} - N_{m+d-1}},$$

or it may be found by dividing the single premium by

$$1 - \frac{l_{m+d}}{l_m} r^d + a_m - \frac{l_{m+d}}{l_m} r^d . a_{m+d} .$$

ENDOWMENTS.

The present value of £1 to be received at the end of n years, pı vided a life now aged m, survive that term, is

$$\frac{l_{m+n}}{l_m} r^n, \text{ or } \frac{D_{m+n}}{D_m};$$

the annual premium for the same, payable n years at the beginning each year is

$$\frac{\frac{l_{m+n}}{l_m} r^n}{1 - \frac{l_{m+n}}{l_m} r^n + a_m - \frac{l_{m+n}}{l_m} r^n . a_{m+n}}, \text{ or } \frac{D_{m+n}}{N_{m-1} - N_{m+n-1}}.$$

The value of £1 to be received at the end of the year in which a l aged m shall die, provided that event happen within n years, or to received at the end of n years if the life survive that time is

$$\frac{M_m + D_{m+n} - M_{m+n}}{D_m}.$$

The annual premium is

$$\frac{M_m + D_{m+n} - M_{m+n}}{N_{m-1} - N_{m+n-1}}.$$

REVERSIONARY ANNUITIES.

On One Life after the failure of another.

The single premium for an annuity on a life aged m after the faili of another aged m_1, is

$$a_m - a_{m, m_1};$$

the annual premium for the same is

$$\frac{a_m - a_{m. m_1}}{1 + a_{m, m_1}}.$$

On One Life after the failure of the Joint Existence *of two others.*

The value of an annuity on a life aged m after the failure of the jo existence of two others aged m_1 and m_2, is

$$a_m - a_{m, m_1, m_2};$$

the annual premium for the same is

$$\frac{a_m - a_{m, m_1, m_2}}{1 + a_{m, m_1, m_2}}.$$

On One Life after the decease of the last Survivor of two others.

The value of an annuity on a life aged m, after the death of the l survivor of two others aged m_1 and m_2, is

$$a_m - a_{m, m_1} - a_{m, m_2} + a_{m, m_1, m_2};$$

the annual premium for the same is

$$\frac{a_m - a_{m, m_1} - a_{m, m_2} + a_{m, m_1, m_2}}{1 + a_{m, m_1} + a_{m, m_2} - a_{m, m_1, m_2}}.$$

On Two Joint Lives after the decease of a third.

The value of an annuity on *two joint lives* aged m and m_1, after the decease of a third aged m_2, is

$$a_{m,\, m_1} - a_{m,\, m_1,\, m_2};$$

the annual premium for the same is

$$\frac{a_{m,\, m_1} - a_{m,\, m_1,\, m_2}}{1 + a_{m,\, m_1,\, m_2}}.$$

On the Survivor of two Lives after the failure of a third.

The value of an annuity on the survivor of two lives aged m and m_1, after the death of another aged m_2, is

$$a_m + a_{m_1} - a_{m,\, m_1} - a_{m,\, m_2} - a_{m_1,\, m_2} + a_{m,\, m_1,\, m_2};$$

the annual premium for the same is

$$\frac{a_m + a_{m_1} - a_{m,\, m_1} - a_{m,\, m_2} - a_{m_1,\, m_2} + a_{m,\, m_1,\, m_2}}{1 + a_{m,\, m_2} + a_{m_1,\, m_2} - a_{m,\, m_1,\, m_2}}.$$

ASSURANCES.

The single premium for an assurance on a *single life* aged m, is

$$A_m = r - (1-r)a_m, \quad \text{or } 1 - (1-r)(1 + a_m), \quad \text{or } \frac{1 - ia_m}{1+i},$$

$$\text{or } \frac{\mathrm{M}_m}{\mathrm{D}_m}, \quad \text{or } 1 - (1-r)\frac{\mathrm{N}_{m-1}}{\mathrm{D}_m};$$

the annual premium for the same is

$$\frac{A_m}{1+a_m}, \quad \text{or } \frac{1}{1+a_m} - (1-r), \quad \text{or } \frac{\mathrm{M}_m}{\mathrm{N}_{m-1}}, \quad \text{or } \frac{\mathrm{D}_m}{\mathrm{N}_{m-1}} - (1-r).$$

The *single premium* for an assurance on *two* joint lives aged m and m_1 is

$$A_{m,\, m_1} = r - (1-r)a_{m,\, m_1}, \quad \text{or } 1 - (1-r)(1 + a_{m,\, m_1}), \quad \text{or } \frac{1 - ia_{m,\, m_1}}{1+i};$$

the annual premium for the same is

$$\frac{A_{m,\, m_1}}{1 + a_{m,\, m_1}}, \quad \text{or } \frac{1}{1 + a_{m,\, m_1}} - (1-r).$$

The single premium for an assurance on the longest of two lives aged m and m_1, is

$$A^{\;1}_{\overline{(m,\, m_1)}} = r - (1-r)(a_m + a_{m_1} - a_{m,\, m_1}),$$

or

$$1 - (1-r)(1 + a_m + a_{m_1} - a_{m,\, m_1}),$$

or

$$\frac{1 - i(a_m + a_{m_1} - a_{m,\, m_1})}{1+i};$$

the annual premium for the same is

$$\frac{A_{\frac{1}{(m,\,m_1)}}}{1+a_m+a_{m_1}-a_{m,\,m_1}}, \quad \text{or} \quad \frac{1}{1+a_m+a_{m_1}-a_{m,\,m_1}}-(1-r).$$

The single premium for an assurance on the last *v* survivors o

number of lives aged *m*, m_1, m_2, &c., is

$$A_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}=r-(1-r)a_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}},$$

or $$1-(1-r)(1+a_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}), \quad \text{or} \quad \frac{1-ia_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}}{1+i};$$

the annual premium will be

$$\frac{A_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}}{1+a_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}}, \quad \text{or} \quad \frac{1}{1+a_{\frac{v}{(m,\,m_1,\,m_2,\,\&c.)}}}-(1-r).$$

TEMPORARY ASSURANCES.

The single premium for an assurance for *n* years on a life aged

$$A_{(m)_{\overline{n}|}}=r.\left\{1-\frac{l_{m+n}}{l_m}r^n\right\}-(1-r)\left(a_m-\frac{l_{m+n}}{l_m}r^n.a_{m+n}\right),$$

or $$\frac{\mathrm{M}_m-\mathrm{M}_{m+n}}{\mathrm{D}_m}, \quad \text{or} \quad \frac{r(\mathrm{N}_{m-1}-\mathrm{N}_{m+n-1})-(\mathrm{N}_m-\mathrm{N}_{m+n})}{\mathrm{D}_m};$$

the annual premium is

$$\frac{A_{(m)_{\overline{n}|}}}{1-\frac{l_{m+n}}{l_m}r^n+a_m-\frac{l_{m+n}}{l_m}r^n.a_{m+n}},$$

or $$\frac{1-\frac{l_{m+n}}{l_m}r^n}{1-\frac{l_{m+n}}{l_m}r^n+a_m-\frac{l_{m+n}}{l_m}r^n.a_{m+n}}-(1-r).$$

or $$\frac{\mathrm{M}_m-\mathrm{M}_{m+n}}{\mathrm{N}_{m-1}-\mathrm{N}_{m+n-1}},$$

or $$r-\frac{\mathrm{N}_m-\mathrm{N}_{m+n}}{\mathrm{N}_{m-1}-\mathrm{N}_{m+n-1}}.$$

The single premium for an assurance for *n* years on *two joint*

aged *m* and m_1 is

$$A_{(m,\,m_1)_{\overline{n}|}}=r\left\{1-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n\right\}-(1-r)\left(a_{m,\,m_1}-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n.a_{m+n,\,m_1}\right.$$

the annual premium is

$$\frac{A_{(m,\,m_1)_{\overline{n}|}}}{1-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n+a_{m,\,m_1}-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n.a_{m+n,\,m_1+n}},$$

or $$\frac{1-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n}{1-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n+a_{m,\,m_1}-\frac{l_{m+n}}{l_m}.\frac{l_{m_1+n}}{l_{m_1}}r^n.a_{m+n,\,m_1+n}}-(1$$

The single premium for an assurance for n years on the longest of two lives aged m and m_1 is

$$A_{\overline{(m, m_1)}_{\overline{n}|}}^{\;1} = A_{(m)_{\overline{n}|}}^{1} + A_{(m_1)_{\overline{n}|}}^{1} - A_{(m, m_1)_{\overline{n}|}}^{1},$$

the annual premium is

$$\frac{A_{\overline{(m, m_1)}_{\overline{n}|}}^{\;1}}{1-\left(\frac{l_{m+n}}{l_m}+\frac{l_{m_1+n}}{l_{m_1}}-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}\right)r^n+a_{(m)_{\overline{n}|}}+a_{(m_1)_{\overline{n}|}}-a_{(m, m_1)_{\overline{n}|}}}.$$

or,

$$\frac{1-\left(\frac{l_{m+n}}{l_m}+\frac{l_{m_1+n}}{l_{m_1}}-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}\right)r^n}{1-\left(\frac{l_{m+n}}{l_m}+\frac{l_{m_1+n}}{l_{m_1}}-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}\right)r^n+a_{(m)_{\overline{n}|}}+a_{(m_1)_{\overline{n}|}}-a_{(m, m_1)_{\overline{n}|}}}-(1-r).$$

DEFERRED ASSURANCES.

The single premium for an assurance on a life aged m, to be entered upon at the expiration of n years is

$$A_{(m)_{|n}} = r \cdot \frac{l_{m+n}}{l_m} r^n - (1-r) \cdot \frac{l_{m+n}}{l_m} r^n \cdot a_{m+n},$$

or $$\frac{l_{m+n}}{l_m} r^n \cdot A_{m+n}, \quad \text{or } \frac{M_{m+n}}{D_m}, \quad \text{or } \frac{D_{m+n}-(1-r)N_{m+n-1}}{D_m};$$

the annual premium for the same payable n years at the commencement of each year is

$$\frac{A_{(m)_{|n}}}{1-\frac{l_{m+n}}{l_m} r^n \cdot + a_m - \frac{l_{m+n}}{l_m} r^n \cdot a_{m+n}}, \quad \text{or } \frac{M_{m+n}}{N_{m-1}-N_{m+n-1}},$$

or $$\frac{D_{m+n}-(1-r)\,N_{m+n-1}}{N_{m-1}-N_{m+n-1}};$$

the annual premium for the whole term of life is

$$\frac{A_{(m)_{|n}}}{1+a_m}, \quad \text{or } \frac{M_{m+n}}{N_{m-1}}, \quad \text{or } \frac{D_{m+n}-(1-r)\,N_{m+n-1}}{N_{m-1}}.$$

The single premium for an assurance on two joint lives aged m and m_1, to commence at the end of n years is

$$A_{(m, m_1)_{|n}} = r \cdot \frac{l_{m+n}}{l_m} \cdot \frac{l_{m_1+n}}{l_{m_1}} r^n - (1-r) \frac{l_{m+n}}{l_m} \cdot \frac{l_{m_1+n}}{l_{m_1}} r^n \cdot a_{m+n, m_1+n},$$

or $$\frac{l_{m+n}}{l_m} \cdot \frac{l_{m_1+n}}{l_{m_1}} r^n \cdot A_{m+n, m_1+n};$$

the annual premium for the same payable n years at the commencement of each year is

$$\frac{A_{(m,\,m_1)_{1n}}}{1-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}r^n+a_{m,\,m_1}-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}\cdot r^n a_{m+n,\,m_1+n}}$$

the annual premium payable during the whole period of *joint existen*
is

$$\frac{A_{(m,\,m_1)_{1n}}}{1+a_{m,\,m_1}}.$$

SURVIVORSHIP ASSURANCES.

The single premium to assure a sum payable on the failure of a li
aged m, provided another aged m_1 survive him is

$$A_{\underset{(1)}{m,\,m_1}}=\frac{1}{2}\left\{A_{m,\,m_1}-\frac{l_{m+1}}{l_m}r\,(1+a_{m+1,\,m_1})+\frac{l_{m-1}}{l_m}a_{m-1,\,m_1}\right\},$$

or $$=\frac{1}{2}\left\{A_{m,\,m_1}+\frac{a_{m-1,\,m_1}}{p_{m-1,\,1}}-\frac{a_{m,\,m_1-1}}{p_{m_1-1,\,1}}\right\},$$

or when $m-1$ is greater than m_1,

$$\frac{1}{2}\left\{1+\frac{r\,(N_{m-1,\,m_1-1}+N_{m-1,\,m_1})-(N_{m-1,\,m_1-1}+N_{m,\,m_1-1})}{D_{m,\,m_1}}\right\},$$

or when m_1-1 is greater than m,

$$\frac{1}{2}\left\{1-\frac{(N_{m-1,\,m_1-1}-N_{m-1,\,m_1})-r(N_{m-1,\,m_1-1}-N_{m,\,m_1-1})}{D_{m,\,m_1}}\right\};$$

the annual premium for the same is

$$\frac{A_{\underset{(1)}{m,\,m_1}}}{1+a_{m,\,m_1}},$$

or when $m-1$ is greater than m_1,

$$\frac{1}{2}\left\{\frac{D_{m,\,m_1}+r(N_{m-1,\,m_1-1}+N_{m-1,\,m_1})-(N_{m-1,\,m_1-1}+N_{m,\,m_1-1})}{N_{m-1,\,m_1-1}}\right\},$$

or when m_1-1 is greater than m,

$$\frac{1}{2}\left\{\frac{D_{m,\,m_1}+r\,(N_{m-1,\,m_1-1}-N_{m,\,m_1-1})-N_{m-1,\,m_1-1}+N_{m-1,\,m_1}}{N_{m-1,\,m_1-1}}\right\}.$$

The single premium to assure a sum for n years to be paid on t
failure of a life aged m, provided another aged m_1 survive him is,

$$A_{\underset{(1)}{(m,\,m_1)}_{n1}}=\frac{1}{2}\left\{A_{(m,\,m_1)_{n1}}+\frac{a_{(m-1,\,m_1)_{n1}}}{p_{m-1,\,1}}-\frac{a_{(m,\,m_1-1)_{n1}}}{p_{m_1-1,\,1}}\right\},$$

or when $m-1$ is greater than m_1,

$$\frac{1}{2}\left\{\frac{r\,(N_{m-1,\,m_1-1}-N_{m+n-1,\,m_1+n-1}+N_{m-1,\,m_1}-N_{m+n-1,\,m_1+n})}{D_{m,\,m_1}}\right.$$
$$\left.\frac{+N_{m+n,\,m_1+n}+N_{m+n,\,m_1+n-1}-(N_{m,\,m_1}+N_{m,\,m_1-1})}{D_{m,\,m_1}}\right\},$$

or when m_1-1 is greater than m,

$$\frac{1}{2}\left\{\frac{r(N_{m-1,\,m_1-1}-N_{m+n-1,\,m_1+n-1}-N_{m,\,m_1-1}+N_{m+n,\,m_1+n-1})}{D_{m,\,m_1}}\right.$$

$$\left.\frac{+N_{m+n,\,m_1+n}+N_{m-1,\,m_1}-(N_{m,\,m_1}+N_{m+n-1,\,m_1+n})}{D_{m,\,m_1}}\right\};$$

the annual premium for the same will be

$$\frac{A_{\underset{(1)}{(m,\,m_1)}\,n}}{1-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}r^n+a_{m,\,m_1}-\frac{l_{m+n}}{l_m}\cdot\frac{l_{m_1+n}}{l_{m_1}}\cdot a_{m+n,\,m_1+n}};$$

or by substituting in the denominator in the expressions for the D and N columns, $N_{m-1,\,m_1-1}-N_{m+n-1,\,m_1+n-1}$ for $D_{m,\,m_1}$.

PURCHASE OF ANNUITIES, SECURING THE CAPITAL BY AN ASSURANCE.

Let s = the sum,
i = annual interest of £1,
p = annual premium for assurance of £1,
a = the annuity.

If the annuity be supposed payable at the end of each year,

$$s=a.\frac{1-p(1+i)}{i+p(1+i)},$$

$$a=s.\frac{i+p(1+i)}{1-p(1+i)},$$

$$i=\frac{a-p(s+a)}{s+p(s+a)},$$

$$p=\frac{a-si}{(s+a)(1+i)}.$$

If the annuity be supposed payable until the day of death,

$$s=a.\frac{1-p}{i+p},$$

$$a=s.\frac{i+p}{1-p},$$

$$i=\frac{a-p(s+a)}{s},$$

$$p=\frac{a-is}{s+a}.$$

VALUATION OF LIFE POLICIES.

Let s = the sum assured,
p_m = the annual premium charged on a life aged m.

The value of a policy that has been in force n years, on which premium is just due but not paid, is

$$s.A_{m+n}-p_m(1+a_{m+n}).$$

If the premium has just been paid the value will be

$$s.A_{m+n}-p_m.a_{m+n}.$$

When the value of the policy is calculated at the same rate of inte and by the same table of mortality as the original premium was obtai from, the value of a policy effected when the age of the life was m has been in force n years on which the premium is just due and not p will be

$$s\left\{1-\frac{1+a_{m+n}}{1+a_m}\right\}.$$

INCREASING AND DECREASING PREMIUMS.

If the annual premium for an assurance of £1 be *increased* £q a the payment of every t premiums, and remain constant after vt p ments, the annual premium to be charged for the first t payments be

$$\frac{A_m-q\{a_{(m)\,\rceil 1t-1}+a_{(m)\,\rceil 2t-1}+a_{(m)\,\rceil 3t-1}+\ldots\ldots+a_{(m)\,\rceil vt-1}\}}{1+a_m},$$

or

$$\frac{M_m-q(N_{m+t-1}+N_{m+2t-1}+N_{m+3t-1}+\ldots\ldots+N_{m+vt-1})}{N_{m-1}}.$$

If the annual premium be *decreased* £q after the payment of ev t premiums, the annual premium for the first t payments will be

$$\frac{A_m+q(a_{(m)\,\rceil 1t-1}+a_{(m)\,\rceil 2t-1}+a_{(m)\,\rceil 3t-1}+\ldots\ldots+a_{(m)\,\rceil vt-1})}{1+a_m},$$

or

$$\frac{M_m+q(N_{m+t-1}+N_{m+2t-1}+N_{m+3t-1}+\ldots\ldots+N_{m+vt-1})}{N_{m-1}}.$$

If the annual premium for $t-1$ for the first t years be £p, for second t years $p_{\prime}$, for the third t years $p_{\prime\prime}$, &c., and the premium constant after vt years, this constant premium will be

$$\frac{A_m-\left\{p(1+a_{(m)\,\rceil t-1})+a_{(m)\,t\rceil t-1}\,p_{\prime}+a_{(m)\,t\rceil 2t-1}\,p_{\prime\prime}+\text{\&c.}\right\}}{a_{(m)\,\rceil vt-1}}$$

where $a_{(m)\,t\rceil t-1}$, $a_{(m)\,t\rceil 2t-1}$, &c., denote an annuity for t years, to l entered upon at the expiration of $t-1$ years, $2t-1$ years, &c.

The following is also an expression for the constant premium:

$$\frac{M_m-\{p(N_{m-1}-N_{m+t-1})+p_{\prime}(N_{m+t-1}-N_{m+2t-1})+p_{\prime\prime}(N_{m+2t-1}-N_{m+3t-1})+}{N_{m+vt-1}}$$

If the premium for £1 for the first t years from the time of valuing the policy be p, for the next t years be $p_{,}$, for the next $t_{,,}$ years $p_{,,,}$ &c., and we call the last premium which is constant after the payment of v premiums P, and the age at the time of valuation be m, the value of the policy, supposing the premium just paid, will be

$$A_m-(p\,.\,a_{(m)_{\overline{t|}}}+p_{,}\,.\,a_{(m)_{\overline{t_{,}|t}}}+p_{,,}\,.\,a_{(m)_{\overline{t_{,,}|t+t_{,}}}}+\ldots\ldots\mathrm{P}\,.\,a_{(m)_{\overline{|v}}}),\quad\text{or}$$

$$\frac{\mathrm{M}_m-\{p(\mathrm{N}_m-\mathrm{N}_{m+t})+p_{,}(\mathrm{N}_{m+t}-\mathrm{N}_{m+t+t_{,}})+p_{,,}(\mathrm{N}_{m+t+t_{,}}-\mathrm{N}_{m+t+t_{,}+t_{,,}})+\mathrm{P}.\mathrm{N}_{m+v}\}}{\mathrm{D}_m}$$

INCREASING AND DECREASING ANNUITIES.

The value of an annuity certain for n years, commencing at £a and *increasing* £p each year, is

$$a.\frac{1-(1+i)^{-n}}{i}+p.\frac{1-(1+in)(1+i)^{-n}}{i^2}.$$

The value of a similar annuity decreasing £p each year is

$$a.\frac{1-(1+i)^{-n}}{i}-p.\frac{1-(1+in)(1+i)^{-n}}{i^2}.$$

The value of an annuity for n years depending on the existence of a life aged m, commencing at £a and *increasing* £p each year will be

$$\frac{(a-p)(\mathrm{N}_m-\mathrm{N}_{m+n})+p(\mathrm{S}_m-\mathrm{S}_{m+n}-n.\mathrm{N}_{m+n})}{\mathrm{D}_m}.$$

The value of a similar annuity decreasing £p each year will be

$$\frac{(a+p)\,(\mathrm{N}_m-\mathrm{N}_{m+n})-p(\mathrm{S}_m-\mathrm{S}_{m+n}-n\,\mathrm{N}_{m+n})}{\mathrm{D}_m},$$

in which case p must not exceed $\frac{a}{n-1}$, as the annuity would then ultimately become negative.

The value of an annuity for the whole term of life, commencing at £a and *increasing* £p annually, will be

$$\frac{(a-p)\,\mathrm{N}_m+p.\mathrm{S}_m}{\mathrm{D}_m}.$$

The value of a similar annuity *decreasing* annually £p will be

$$\frac{(a+p)\,\mathrm{N}_m-p.\mathrm{S}_m}{\mathrm{D}_m}.$$

INCREASING AND DECREASING ASSURANCES.

The single premium for an assurance for n years on a life aged m, commencing at £a and *increasing* £p each year, will be

$$\frac{(a-p)\,(\mathrm{M}_m-\mathrm{M}_{m+n})+p\,(\mathrm{R}_m-\mathrm{R}_{m+n}-n.\mathrm{M}_{m+n})}{\mathrm{D}_m}.$$

The annual premium for the same will be

$$\frac{(a-p)(M_m-M_{m+n})+p\,(R_m-R_{m+n}-n.M_{m+n})}{N_{m-1}-N_{m+n-1}}.$$

The single premium for a similar assurance, *decreasing* £*p* an
will be

$$\frac{(a+p)(M_m-M_{m+n})-p(R_m-R_{m+n}-n.M_{m+n})}{D_m}.$$

The annual premium will be

$$\frac{(a+p)(M_m-M_{m+n})-p(R_m-R_{m+n}-n.\,N_{m+n})}{N_{m-1}-N_{m+n-1}}.$$

The single premium for an assurance for the whole term of life
mencing at £*a* and increasing £*p* each year will be

$$\frac{(a-p)\,M_m+p.R_m}{D_m}.$$

The annual premium will be

$$\frac{(a-p)\,M_m+p.R_m}{N_{m-1}}.$$

The single premium for a similar assurance, decreasing £*p* eac
will be

$$\frac{(a+p)\,M_m-p.R_m}{D_m}.$$

The annual premium will be

$$\frac{(a+p)\,M_m-p.R_m}{N_{m-1}}.$$

ENDOWMENTS, ANNUITIES, AND ASSURANCES,

With return of premiums in case of Death.

The annual premium to secure £1 to be received at the end of *n*
provided a life aged *m* survive that term, or in the event of his
before that time all the premiums to be returned at the end of th
in which he shall cease to exist will be

$$\frac{D_{m+n}}{N_{m-1}+R_{m+n}+n.M_{m+n}-N_{m+n-1}-R_m}.$$

The annual premium to secure £1 *per annum* to be entered u
the expiration of *n* years, subject to the existence of a life now ag
or in the event of his dying before that time the premiums to
turned at the end of the year in which the existence shall fail, will

$$\frac{N_{m+n}}{N_{m-1}+R_{m+n}+n.M_{m+n}-N_{m+n-1}-R_m}.$$

The annual premium to assure £1 and a return of all the premiums paid will be

$$\frac{M_m}{N_{m-1}-R_m}.$$

Suppose an assurance of £1 to be provided for by payments at the beginning of each year, the premiums being diminished at the end of every successive year by the *n*th part of the first premium, so that after *n* payments they shall altogether cease, the first premium will be

$$\frac{M_m}{N_{m-1}-\frac{1}{n}(S_m-S_{m+n})}.$$

PRACTICAL RULES AND EXAMPLES.

To find the value of an annuity on single and joint lives:

Find in the table the present value of £1 per annum at the given age and rate per cent, and multiply by the annuity whose value is required.

Example. What is the present value of an annuity of £70 on a life aged 36, according to the Carlisle rate of mortality, when 6 per cent interest is allowed?

In Table 21, under 6 per cent opposite the age 36, we find 12.465
which, multiplied by 70
gives 872.550=
£872 11

When the annuity is payable half-yearly, add .25 to the number of years' purchase in the table; when payable quarterly, add .375.

In the above example, if the annuity be payable half-yearly, the value will be 12.715×70 = 890.05=890 1 0; if payable quarterly, the value will be 12.840×70=898.80=£898 16 0.

Example. What is the present value of an annuity of £40 payable during the joint existence of two lives aged 35 and 40? (Northampton 3 per cent.)

In Table 8, look for younger age 35, and opposite to 40 we have 11.2134
which, multiplied by 40
gives 448.536=
£448 10 9

Annuities on the Survivor of Two Lives.

Look in the table for the present value of £1 per annum on ea of the single lives, and subtract from the sum the value of the annui on the two joint lives.

Example. What is the present value of £40 on the survivor of t lives aged 35 and 40? (Northampton 3 per cent.)

In Table 7, opposite to the age of 35 we have . .	15.9378
ditto 40 . .	14.8476
	30.7854
In Table 8, at the ages of 35 and 40 we have . .	11.2134
which, subtracted, gives	19.5720
this, multiplied by 40	40
gives	782.880=

£782 17 7, the present value of the annuity.

Annuity on Three Joint Lives.

As but few tables of the values of annuities on three joint lives ha been published, we can in general only approximate to the values means of the tables of values on two joint lives, which may be done the following manner:—

Take the present value of the annuity on the joint lives of the t oldest, and find at what age the present value of an annuity on a sin life will be equal thereto; the value of an annuity on the joint lives the youngest of the three lives and a life of the age just found will the value of the annuity on the three lives nearly.

In general we shall be nearer the truth if we subtract .05 from t value just found.

What is the present value of an annuity of £50, to cease on t failure of the joint existence of three lives aged 24, 36, and 5 (Northampton 3 per cent.)

In Table 8, we find the value of an annuity on two joint liv aged 26 and 56, which by Table 7, is the value of an annuity on single life aged 63 nearly.

The value of an annuity on two joint lives aged 24 and 63, dim nished by .05 is 7.8083

multiplied by 50

390.415 =£390 8 3.

Annuity on the Survivor of Three Lives.

Add together the values of the annuities on each single life, from th sum subtract the value of the annuity on each pair of joint lives, an add the value of the annuity on the three joint lives.

Example. What is the present value of £50 per annum so long any one of the three lives aged 24, 36, and 56, shall be in existence (Northampton 3 per cent.)

Value of £1 annuity at 24 = 17.9830
do. do. 36 = 15.7288
do. do. 56 = 10.8826
do. on 3 joint lives by last example } = 7.8083

52.4027
30.6473

21.7554
50

1087.770 = £1087.15 6.

Annuity at 24 and 36 = 12.4081
do. 24 and 56 = 9.3224
do. 36 and 56 = 8.9168

30.6473

Deferred Annuity.

To find the value of a deferred annuity on a single life.

Find the value of the annuity of £1 in the table opposite to the age which the life will attain when the annuity is entered upon, multiply it by the number of living in the table at the same age, and by the value of £1 due at the end of as many years as the annuity is deferred, and divide by the living at the present age.

Or, divide the number in column N opposite the age the life will attain when the annuity is entered upon, by the number in column D opposite to the present age.

Example. What is the present value of £50 per annum to be entered upon at the end of seven years, and then to continue until the death of an individual now aged 43? (Carlisle 4 per cent.)

By Table 1, the number living at the age of 43 is 4869, and at the age of 50 the number is 4397, and the present value of £1 due at the end of seven years is .759918, Table 4.

The present value of £1 per annum at the age of 50 is 12.8690; therefore,

$$12.8690 \times .759918 \times \frac{4395}{4869} = 8.8313 = \text{value of deferred annuity of £1,}$$

and 8.8313 × 50 = 441.565 = £441 11 3 = value required.

Or thus:

The number in column N at the age of 50, is 7962.236
and in column D at the age of 43, is 901.584

$$\therefore \frac{7962.236}{901.584} = 8.8313 = \text{value of deferred annuity of £1,}$$

8.8313 × 50 = 441.565 = £441 11 3, as before.

Deferred Annuity on Two Joint Lives.

Multiply together the number living at the age of each life when th annuity is to be entered upon by the present value of £1 due as man years as the annuity is to continue, and divide by the product of th living at the present ages, and multiply the quotient by the value of th annuity on the joint lives at their ages when entering upon the annuit

Example. What is the present value of an annuity of £30, to b entered upon at the expiration of 10 years, and then to continue durin the joint existence of two lives now aged 38 and 42? (Northampto 3 per cent.)

Table 1, living at 38 = 3785, living at 42 = 3482, living a 48=3014, living at 52=2694. Table 4, Part 1, present value o £1 due 10 years is .744094, Table 8, the value of £1 per annum o two joint lives aged 48 and 52, is 8.6987

$$\frac{3014}{3785}\times\frac{2694}{3482}\times .744094\times .8.6987=3.9887=\left\{\begin{array}{l}\text{value of deferr}\\ \text{annuity of £1}\end{array}\right.$$

$$3.9887\times 30=119.661=\text{£}119\ 13\ 3 \qquad \text{do. of £3}$$

Deferred Annuity on the Survivor of Two Lives.

Find the value of the deferred annuity on each of the single liv and from the sum subtract the value of the deferred annuity on the tw joint lives.

Example. Required the present value of an annuity of £30, to entered upon at the expiration of 10 years, and then to continue un the death of the last survivor of two lives aged 38 and 42. (Nort ampton 3 per cent.)

By Table 7, the value of £1 per annum on a life aged 48 is 12.950
do. do. 52 11.930

The number of living as in last example:

$$12.9508\times\frac{3014}{3785}\times .744094=7.6736=\left\{\begin{array}{l}\text{value of deferred annuity o}\\ \text{£1 on a life aged 38}\end{array}\right.$$

$$11.9303\times\frac{2694}{3482}\times .744094=\underline{6.8683} \qquad \text{do.} \qquad \text{do.} \qquad 42$$

$$\begin{array}{rl} 14.5419 & \\ 3.9887= & \left\{\begin{array}{l}\text{do. by last example on th}\\ \text{joint lives}\end{array}\right. \\ \hline 10.5532= & \text{do. on the survivor} \\ 30 & \\ \hline 316.5960= & \text{£}316\ 11\ 11=\text{value required.}\end{array}$$

Temporary Annuities.

From the value of the life annuity to be entered upon immediatel subtract the value of an annuity deferred the term the annuity con tinues.

Or, from the number in column N opposite to the present age, subtract the number in column N opposite the age at the expiration of the annuity, and divide by the number in column D at the present age.

Example. What is the present value of an annuity of £50 for the next seven years, subject to the existence of a life aged 43? (Carlisle 4 per cent.)

By Table 21, 14.5053 = value of £1 per annum on a life 43
8.8313 = { do. do. deferred 7 years, by Example in page 223,
5.6740 = value of £1 per annum for the next 7 years
50
283.7000 = £283 14 0 = value required.

Or thus:

By Table 13, the number in column N at age 43, is 13077.739
do. do. 50, 7962.236
the difference 5115.503

which, divided by 901.584, the number in column D at the age 43, gives

$\frac{5115.503}{901.584}$ = 5.674 = value of £1 per annum for 7 years
50
283.700 = £283 14 0, value required as before.

ENDOWMENTS.

The present value of a sum to be received at the end of any number of years, provided a certain party is then alive, is found by multiplying the present value of £1 due at the end of that term by the number of living at the age the life will then attain, and dividing by the living at the present age.

Or, by dividing the number in column D opposite the age of the life when the money is receivable by the number in column D opposite the present age.

A father wishes to provide for his son, now 10 years of age, £100 when he attains the age of 21 years; what present sum will provide for the same? (Carlisle 4 per cent.)

21 − 10 = 11

By Table 4, Part 1, the present value of £1 due at the end of 11 years is . . . . } .649581
which, multiplied by the living at 21, Table 1, . . = 6047
gives 3928.016

this result divided by 6460, the living at 10 years, gives

$\frac{3928.016}{6460}$ = .60805, the value of £1 to be received at the age of 21

∴ .60805 × 100 = 60.805 = £60 16 1, value required.

Number in column D opposite age 10 is 4364.1445
do. do. 21 2653.6268

$$\therefore \frac{2653.6268}{4364.1445} \times 100 = 60.805 = \text{£}60\ 16\ 1, \text{ as before.}$$

To find the annual premium:

Divide the single premium by unity added to the present value of annuity on the life for a term one year less than the number that m lapse before the money is payable.

Or, divide the number in column D by the difference between number in column N opposite the age one year younger than the p sent age and the number in column N opposite the age one year youn than the age of the life when the money is payable.

Multiplying .60805 the present value of £1 to be received at age of 21, by 18.23196, the annuity on a life 21, we obtain 11.085 which subtracted from

19.58339 the value of an annuity on a life aged
leaves 8.49745 = {value of an annuity of £1 for 10 years o life aged 10,
.60805 = present value of the last payment ther
the difference 7.88940 = value of £1 per annum for 9 years on a aged 10.

$$\frac{60.805}{1+7.88940} = \frac{60.805}{8.88940} = 6.840 = \text{£}6\ 16\ 10, \text{ annual premium.}$$

$$\text{or } \frac{D_{21}}{N_9 - N_{20}} = \frac{2653.627}{89828.891 - 51034.451} \times 100 = \frac{265362.7}{38794.440} = 6.84$$

REVERSIONARY ANNUITIES.

One Life on the death of another.

From the value of the annuity on the life in expectation, subtract value of the annuity on the joint lives.

Example. What is the value of £60 per annum so long as a per aged 43 shall survive another aged 66? (Northampton 3 per cent.)

$$\begin{aligned} a_{43} &= 14.1626 \text{ Table 7,} \\ a_{43.66} &= \underline{\ 6.7124\ } \text{ ,, 8.} \\ & \quad 7.4502 \\ & \quad \underline{\qquad 60} \\ & \quad 447.0120 = \text{£}447\ 0\ 3. \end{aligned}$$

To find the annual premium, divide the single premium by u added to the value of £1 per annum on the joint lives.

7.7124)477.0120(61.850 = £61 17 0
462744
142680
65556
61699
3857

On Two Joint Lives after the death of a Third.

From the value of the annuity on the two lives in expectation, subtract the value of an annuity on the three joint lives.

Example. A and B, aged 38 and 42, are entitled on the death of C aged 68, to an annuity of £70 on their joint lives: what is the value thereof? (Northampton 3 per cent.)

Annuity on two joint lives 42 and 68 = annuity on single life aged 72.

Value of £1 per annum on two joint lives, 38 and 42 . } = 10.7438
do. three lives, 38, 42, and 68 = 5.3685 = anny. 38 and 72 nearly
5.3753
70
376.271 = £376 5 5.

To find the annual premium, divide by unity added to the present value of £1 per annum on the three joint lives.

6.3685)376.271(59.083 = £59 1 8
318425
578460
573165
5295
5094
201

On One Life after the failure of the joint Existence of Two others

From the present value of the annuity on the life in expectation, subtract the annuity on the three joint lives.

Example. What is the value of an annuity of £70 on a life now aged 36, after the failure of the joint existence of two others aged 62 and 68? (Northampton 3 per cent.)

Table 7, annuity of £1 at age 36 . . = 15.7288
do. 8, annuity at 36, 62, and 68, equal annuity at 36 and 74, nearly } = 4.9004
10.8284
70
757.988 = £757 19 9

To find the annual premium, divide the single premium by added to the value of £1 per annum on the three joint lives.

$$\begin{array}{rl}
5.90936)757.988\,(128.269 = & \\
590936 & \quad £128\ 5\ 5 \\
\hline
167052 & \\
1181872 & \\
\hline
488648 & \\
472749 & \\
\hline
15899 & \\
11819 & \\
\hline
4080 & \\
3545 & \\
\hline
535 &
\end{array}$$

On One Life after the Death of the Survivor of Two others

To the value of an annuity on the life A in expectation, add the of an annuity on the joint lives of A and the other two (P and Q, tract the values of annuities on the joint lives of A and P, and joint lives of A and Q.

A life aged 16 is entitled to an annuity of £40 on the death survivor of two lives aged 65 and 70. What is the present (Northampton 3 per cent.)

$$\begin{array}{lrl}
a_{16} & =19.4358 & \text{Table 7,} \\
a_{16.65,70} & = \underline{\ 4.3541} & \text{do. 8,} \\
 & 23.7899 & \\
 & \underline{13.7991} & \\
 & 9.9908 & \\
 & \underline{40} & \\
 & 399.632 & =£399\ 12\ 8
\end{array}
\qquad
\begin{array}{r}
a_{16.65}=7.5613 \\
a_{16.70}=\underline{6.2378} \\
13.7991
\end{array}$$

The annual premium is found by adding unity to the sum values of £1 per annum on the joint lives of A and P, and joint lives of A and Q, subtracting therefrom the annuity on the joint lives, and dividing the single premium by the result.

$$\begin{array}{r}
13.7991 \\
\underline{4.3541} \\
9.4450
\end{array}
\qquad
\begin{array}{rl}
10.4450)399.632(38.261 & =£38\ 5\ 3 \\
313350 & \\
\hline
86282 & \\
83560 & \\
\hline
2722 & \\
2089 & \\
\hline
633 & \\
626 & \\
\hline
7 &
\end{array}$$

On the Survivor of Two Lives after the Failure of a Third

Add together the values of the annuities on each of the lives A in expectation, subtract the annuity on the joint lives of A and life in possession, and on the joint lives of B and P, and add the annuity on the joint lives of A, B, and C.

Example. What is the value of £50 per annum on the survivor of two lives aged 21 and 23, after the death of another aged 58? (Northampton 3 per cent.)

annuity at 21 . =18.4708
do. 23 . =18.1486
do. 21, 23, & 58= 7.8560
44.4754
17.9450
26.5304
50
1336.520 =£1336 10 5.

annuity at 21 & 58=8.9936
do. 23 & 58=8.9514
17.9450

To find the annual premium, add unity to the sum of the values of £1 per annum on the joint lives of A and P, and of B and P, subtract the value of the annuity of £1 on the three joint lives, and divide the single premium by the result.

Value of £1 annuity on joint lives 21 and 58=8.9936
do. 23 and 58=8.9514
17.9450
7.8560
10.0890

11.0890)1336.520(120.527= £120 10 6
227620
221780
5840
5545
295
222
73

ASSURANCES.

For the whole Term of Life (Single Premium).

Subtract from unity the present value of £1 due at the end of one year, and multiply the difference by unity added to the present value of £1 per annum on the life or lives, and subtract the result from unity, which gives the present value of an assurance of £1.

When the assurance is on one life only, divide the number in column M opposite the age of the life by the number in column D; or,

Multiply the number in column N opposite to the age one year younger than that of the given life by the difference between unity and the present value of £1 due at the end of one year, divide by the number in column D at the present age, and subtract the result from unity.

Annual Premium.

Divide the single premium by unity added to the value of £1 per annum on the life or lives; or,

Divide unity by the present value of an annuity of £1 on the given life or lives increased by unity, and from the quotient subtract the difference between £1 and its present value at the end of one year; the result will be the annual premium for the assurance of £1.

When the assurance is on a single life

Divide the number in column M opposite to the present age by the number in column N opposite to the age one year younger; or,

Divide the number in column D opposite to the present age by the number in column N opposite to the age one year younger, and subtract from the quotient the difference between unity and the present value of £1 receivable at the end of one year.

Example. What is the single premium that should be paid to secure £200 at the end of the year in which a person now aged 46 shall cease to exist? (Northampton 3 per cent.)

By Table 7, the value of £1 per annum at the age of 46 increased by unity, is 14.4498, and by Table 4, Part 1,

$1-.970874 = .029126 =$ difference between unity and the presen value of £1 to be received at the end of one year.

$1-(14.4498 \times .029126)=1-.47085=.57915=$ the singl premium for an assurance of £1, therefore

$.57915 \times 200=115.830=$ £115 16 7 = single premium required.

For the annual premium we have

$$\frac{115.830}{14.4498}=8.016=£8\ 0\ 4;$$

or, $\frac{1}{14.4498}-.029126=.06921-.02913=.04008=$ annual premium for assurance of £1;

therefore $.04008 \times 200=8.016=$ £8 0 4, as before.

Example 2. Required the single and annual premium to insure £200 on a life aged 56, Carlisle 4 per cent.

By Table 13, the number in column M opposite to the age 56 is 240.1036, and the number in column D 444.8289;

therefore, by the rule, $\frac{240.1036}{444.8289}\times 200=.53977\times 200=107.954=$ £107 19 1 = single premium.

The number in column N, opposite to the age of 55 is 5322.8496,

therefore, $\frac{240.1036}{5322.8496}\times 200=.04511\times 200=9.022=$ £9 0 5 = the annual premium.

Example 3. Required the single and annual premium to insure £250 on the *joint lives* of two persons aged 36 and 41. (Northampton 3 per cent.)

The difference between unity and the present value of £1 due at the end of one year 1—.9708740=.029126.

By Table 8, the value of the annuity on the joint lives increased by unity is 12.0213.

1-(12.0213 × .029126)=1 - .35013=.64987=*single premium* for assurance of £1;

therefore, .64987 × 250=162.467=162 9 4 single premium required.

For the annual premium we have

$\frac{1}{12.0213}$ -.029126=.083186 - .029126= .054060 = *annual premium* for assurance of £1.

.054060 × 250=13.515=£13 10 3.

Example 4. What single and annual premium should be required to secure £250 at the end of the year in which the survivor of two lives aged 43 and 45 shall cease to exist? (Northampton 3 per cent.)

Table 7, the value of £1 per annum on a life aged 43 is =14.1626
do. do. do. 45 =13.6920
27.8546
Table 8, do. on two joint lives aged 43 and 45= 9.9703
p. 222, value of £1 per annum on the survivor of the two lives . . . . =17.8843

Therefore, 1—(18.8843 × .029126)=1—.55003=.44997= : single premium for £1.

.44997 × .250=£112.492=112 9 10=single premium required.

For the annual premium we have

$\frac{1}{18.8843}$ —.029126=.052954—.029126=.023828 = annual prem. for £1;

therefore, .023828 × 250=5.957=£5 19 2=annual prem. required.

Example 5. Required the single and annual premium to secure £400 on the failure of the joint existence of three lives aged 38, 45, and 64. (Northampton 3 per cent.)

By Table 8, the value of £1 annuity on two joint lives aged 45 and 64 is 7.0536, which by Table 7, is equal to the value of the annuity on a single life aged 69; the value of £1 per annum on two joint lives aged 38 and 69 is 6.1608, which, diminished by .05, gives 6.1108, the value of £1 per annum on three joint lives aged 38, 45, and 64 (page 222.)

1-(.029126 × 7.1108)=1—.20711=.79289= single premium for assurance of £1;

therefore, .79289 × 400=317.156=£317 3 0=single prem. required.

For the annual premium we have

$$\frac{1}{7.1108}-.02913=.14063-.02913=.11150=\text{annual prem. for £1;}$$

therefore .11150 × 400 = 44.600 = £44 12 0 = annual prem. required.

Example. Required the single and annual premium for the insurance of £400 on the death of the survivor of three lives aged 38, 45, and 64. (Northampton 3 per cent.)

15.2975 = value of £1 per annum on a life aged 38, Table 7,
13.6920 = do. do. do. 45,
8.6115 = do. do. do. 64,
6.1108 = do. by last example on three joint lives aged 38, 45, and 64.
43.7118

10.4026 = {value of £1 per annum on two joint lives aged 38 and 45, Table 8,
7.3152 = do. do. do. 38 and 64,
7.0536 = do. do. do. 45 and 64,
24.7714

43.7118 − 24.7714 = 18.9404 = value of £1 per annum on the survivor of three lives aged 38, 45, and 64 (page 222)

1 − (19.9404 × .029126) = 1 − .58077 = .41923 = single prem. for £1

.41923 × 400 = 167.692 = £167 13 10 = *single premium* required.

For the annual premium we have

$$\frac{1}{19.9404}-.02913=.05015-.02913=.02102=\text{ann. prem. for £1,}$$

.02102 × 400 = 8.408 = £8 8 2 = annual premium required.

TEMPORARY ASSURANCES.

Find the present value of £1 at the end of the term subject to the existence of the life or lives, subtract it from unity, and multiply the difference by the present value of £1 due at the end of one year; from the result subtract the present value of £1 per annum on the life or lives for the term, multiplied by the difference between unity and the present value of £1 due at the end of a year.

Or, When the assurance is on a *single life*, divide the difference between the numbers in column M at the present age, and at the age which he would attain on surviving the term of assurance by the number in column D at the present age.

To find the annual premium:

Find the present value of the expectation of receiving £1 at the end of the term, subject to the existence of the lives; subtract it from unity and divide the difference by the difference increased by the value of £1 per annum for the term on the given lives; from the quotient take the difference between unity and the present value of £1 due at the end of one year.

When there is only one life

Divide the difference between the numbers in column M at the present age, and at the age which the party would attain on surviving the term of the assurance, by the difference between the numbers in column N at ages respectively one year younger than taken for column M.

Example 1. What is the present value of an assurance of £200 for seven years on a life aged 36? (Northampton 3 per cent.)

Table 1, living at 36=3935, living at 43=3404,

Table 4, Part 1, the present value of £1 due 7 years =.813092
do. do. 1 year =.970874

$$\frac{3404}{3935}=.865057=\text{expectation of life surviving seven years,}$$

.865057 × .813092=.703371=value of expectation of receiving £1 at the end of the term,

1 − .703351=.296649,

.296649 × .970874=.2880087,

By Table 7, the value of £1 per annum on a life aged 36=15.7288
do. do. 43=14.1626

15.7288—(14.1626 × .703371)=15.7288—9.9616=5.7672= value of temporary annuity for seven years,

.2880087 − (.029126 × 5.7672) =.2880087 − .167975=·120034 = single premium for assurance of £1,

.120034 × 200=24.0068=£24 0 2=single premium required.

$$\frac{.296649}{.296649+5.7672}-.02913=\frac{.296649}{6.0638}-.02913=$$

.04892 − .02913=.01979=annual prem. for assurance of £1,
.01979 × 200=3.958=£3 19 2 do. £200.

Example 2. Required the single and annual premium for an assurance of £300 for 6 years on a life aged 36. (Carlisle 4 per cent.)

Number in col. M at 36= 454.802	Number in col. N at 35=21797.041
do. 42= 377.064	do. 41=14930.643
do. in col. D at 36=1293.150	6866.398

$$\frac{454.802-377.064}{1293.150}=\frac{77.738}{1293.150}=.06012=\text{single premium for assurance of £1,}$$

.06012 × 300=18.036=£18 0 9 single premium for £300.

For the annual premium,

```
  77.738
--------- = .01132=annual premium for assurance of £1 for 7 years,
6866.398        300
           -----------
            3.396=£3 7 11          do.          £300.
```

ASSURANCE ON ONE LIFE AGAINST ANOTHER.

To find the single premium to secure a sum payable on the death of A, provided he die before B:

First, find the present value of an assurance of £1 on the two joint lives, then find by the tables the value of an annuity of £1 on two joint lives, one a year younger than A, the other of the age of B, and divide it by the probability of a life one year younger than A living one year; add the result to the present value of the assurance of £1 on the joint lives.

Then subtract the value of an annuity of £1 on the two joint lives, one the age of A, the other one year younger than B, divided by the chance of a life one year younger than B living one year.

The difference divided by two will be the value of an assurance of £1 on the death of A, provided he die before B.

The annual premium is found by dividing the single premium by the value of an annuity of £1 on the joint lives of A and B increased by unity.

Example. What single and annual premium should be charged to insure £500 on the death of a person aged 38, provided another aged 43, survive him? (Northampton 3 per cent.)

```
                 10.6349 value of annuity at 38.43,
                 10.7170=       do.       37.43,
                 10.7438=       do.       38.43.

 .029126  Table 5, age 37, 1.019810    Table 5, age 42, 1.022910
 9436.11                   0717.01                      8347.01
 -------                   -------                      -------
   29126                   1019810                      1022910
    2913                     71387                        71604
    1747                      1020                         4092
      87                       713                          307
      12                  --------                           82
       2                  10.92930                     --------
 -------                                               10.98995
  .33887        11.6349)150.120(12.903=£12 18
  .66113                116349      ann. prem.
10.92930                ------
--------                 33771
11.59043                 23270
10.98995                ------
--------                 10501
2).60048                 10471
--------                ------
  .30024                   .30
     005
--------
150.120=£150 2 5 single premium.
```

TABLE I.

of Rates of Mortality at Northampton, Carlisle, the Equitable Insurance Office, by G. Davies, Esq., and according to the Observations of Des Parcieux.

rthampton.		Carlisle.		Des Parcieux.		Equitable.			North-ampton.		Carlisle.		Des Parcieux.		Equitable.	
Living.	Decrements.	Living.	Decrements.	Living.	Decrements.	Living.	Decrements.	Age	Living.	Decrements.	Living.	Decrements.	Living.	Decrements.	Living.	Decrements.
11650	3000	10000	1539					53	2612	82	4211	68	549	11	1826	41
8650	1367	8461	682					54	2530	82	4143	70	538	12	1785	41
7283	502	7779	505					55	2448	82	4073	73	526	12	1744	42
6781	335	7274	276	1000	30			56	2366	82	4000	76	514	12	1702	43
6446	197	6998	201	970	22			57	2284	82	3924	82	502	13	1659	44
6249	184	6797	121	948	18			58	2202	82	3842	93	489	13	1615	45
6065	140	6676	82	930	15			59	2120	82	3749	106	476	13	1570	46
5925	110	6594	58	915	13			60	2038	82	3643	122	463	13	1524	46
5815	80	6536	43	902	12			61	1956	82	3521	126	450	13	1478	46
5735	60	6493	33	890	10			62	1874	81	3395	127	437	14	1432	47
5675	52	6460	29	880	8	2844	11	63	1793	81	3268	125	423	14	1385	48
5623	50	6431	31	872	6	2833	11	64	1712	80	3143	125	409	14	1337	49
5573	50	6400	32	866	6	2822	12	65	1632	80	3018	124	395	15	1288	50
5523	50	6368	33	860	6	2810	12	66	1552	80	2894	123	380	16	1238	51
5473	50	6335	35	854	6	2798	13	67	1472	80	2771	123	364	17	1187	52
5423	50	6300	39	848	6	2785	14	68	1392	80	2648	123	347	18	1135	53
5373	53	6261	42	842	7	2771	15	69	1312	80	2525	124	329	19	1082	54
5320	58	6219	43	835	7	2756	16	70	1232	80	2401	124	310	19	1028	54
5262	63	6176	43	828	7	2740	17	71	1152	80	2277	134	291	20	974	55
5199	67	6133	43	821	7	2723	18	72	1072	80	2143	146	271	20	919	55
5132	72	6090	43	814	8	2705	18	73	992	80	1997	156	251	20	864	56
5060	75	6047	42	806	8	2687	18	74	912	80	1841	166	231	20	808	56
4985	75	6005	42	798	8	2669	19	75	832	80	1675	160	211	19	752	55
4910	75	5963	42	790	8	2650	19	76	752	77	1515	156	192	19	697	55
4835	75	5921	42	782	8	2631	20	77	675	73	1359	146	173	19	642	54
4760	75	5879	43	774	8	2611	20	78	602	68	1213	132	154	18	588	54
4685	75	5836	43	766	8	2591	21	79	534	65	1081	128	136	18	534	54
4610	75	5793	45	758	8	2570	22	80	469	63	953	116	118	17	480	54
4535	75	5748	50	750	8	2548	23	81	406	60	837	112	101	16	426	53
4460	75	5698	56	742	8	2525	24	82	346	57	725	102	85	14	373	52
4385	75	5642	57	734	8	2501	24	83	289	55	623	94	71	12	321	50
4310	75	5585	57	726	8	2477	25	84	234	48	529	84	59	11	271	47
4235	75	5528	56	718	8	2452	26	85	186	41	445	78	48	10	224	43
4160	75	5472	55	710	8	2426	26	86	145	34	367	71	38	9	181	38
4085	75	5417	55	702	8	2400	26	87	111	28	296	64	29	7	143	32
4010	75	5362	55	694	8	2374	27	88	83	21	232	51	22	6	111	26
3935	75	5307	56	686	8	2347	27	89	62	16	181	39	16	5	85	20
3860	75	5251	57	678	7	2320	28	90	46	12	142	37	11	4	65	16
3785	75	5194	58	671	7	2292	28	91	34	10	105	30	7	3	49	13
3710	75	5136	61	664	7	2264	28	92	24	8	75	21	4	2	36	11
3635	76	5075	66	657	7	2236	28	93	16	7	54	14	2	1	25	9
3559	77	5009	69	650	7	2208	28	94	9	5	40	10	1	1	16	7
3482	78	4940	71	643	7	2180	28	95	4	3	30	7	0	0	9	5
3404	78	4869	71	636	7	2152	29	96	1	1	23	5			4	3
3326	78	4798	71	629	7	2123	30	97			18	4			1	1
3248	78	4727	70	622	7	2093	30	98			14	3				
3170	78	4657	69	615	8	2063	30	99			11	2				
3092	78	4588	67	607	8	2033	31	100			9	2				
3014	78	4521	63	599	9	2002	32	101			7	2				
2936	79	4458	61	590	9	1970	33	102			5	2				
2857	81	4397	59	581	10	1937	35	103			3	2				
2776	82	4338	62	571	11	1902	37	104			1	1				
2694	82	4276	65	560	11	1865	39									

TABLE II

Comparative View of the Expectations of Life at different Places.

Age.	Chester, Males.	Chester, Females.	North-ampton.	Carlisle.	Equitable (Davies).	Sweden, Male & Female.	Des Parcieux.	Govt. Males.
0	34.46	39.44	25.18	38.72				50.16
1	40.80	44.52	32.74	44.68		42.95		50.13
2	43.78	45.22	37.79	47.55		44.92		50.04
3	45.52	49.17	39.55	49.82		46.11	47.71	49.80
4	46.41	50.13	40.58	50.76		46.78	48.17	49.42
5	46.45	50.57	40.84	51.25		46.79	48.27	48.93
6	46.39	50.42	41.07	51.17		46.66	48.20	48.36
7	46.17	49.96	41.03	50.80		46.43	47.98	47.71
8	45.78	49.30	40.79	50.24		46.07	47.66	47.02
9	44.89	48.59	40.36	49.57		45.61	47.30	46.30
10	44.47	47.82	39.78	48.82	48.83	45.07	46.83	45.57
11	43.72	47.02	39.14	48.04	48.02	44.38	46.26	44.83
12	42.94	46.22	38.49	47.27	47.20	43.70	45.58	44.07
13	42.15	45.45	37.83	46.51	46.40	43.01	44.89	43.31
14	41.39	44.68	37.17	45.75	45.60	42.33	44.20	42.53
15	40.62	43.93	36.51	45.00	44.81	41.64	43.51	41.76
16	39.88	43.20	35.85	44.27	44.04	40.92	42.82	41.01
17	39.20	42.50	35.20	43.57	43.27	40.19	42.17	40.29
18	38.55	41.82	34.58	42.87	42.52	39.47	41.52	39.61
19	37.93	41.17	33.99	42.17	41.78	38.74	40.87	38.98
20	37.30	40.49	33.43	41.46	41.06	38.02	40.22	38.39
21	36.67	39.79	32.90	40.75	40.33	37.33	39.62	37.83
22	36.95	39.08	32.39	40.04	39.60	36.64	39.00	37.34
23	36.45	38.37	31.88	39.31	38.88	35.96	38.40	36.87
24	34.85	37.68	31.36	38.59	38.16	35.27	37.78	36.39
25	34.44	37.02	30.85	37.86	37.44	34.58	37.17	35.90
26	33.68	36.46	30.33	37.14	36.73	33.91	36.55	35.41
27	33.11	35.90	29.82	36.41	36.02	33.23	35.93	34.86
28	32.53	35.34	29.30	35.69	35.33	32.56	35.30	34.31
29	31.93	34.78	28.79	35.00	34.65	31.88	34.69	33.75
30	31.30	34.22	28.27	34.34	33.98	31.21	34.06	33.17
31	30.64	33.58	27.76	33.68	33.30	30.57	33.29	32.59
32	29.95	32.94	27.24	33.03	32.64	29.94	32.80	32.00
33	29.29	32.31	26.72	32.36	31.98	29.30	32.16	31.40
34	28.62	31.67	26.20	31.68	31.32	28.67	31.52	30.79
35	27.96	31.04	25.68	31.00	30.66	28.03	30.88	30.17
36	27.31	30.42	25.16	30.32	30.01	27.31	30.23	29.54
37	26.66	29.80	24.64	29.64	29.35	26.68	29.58	28.91
38	26.04	29.18	24.12	28.96	28.70	26.01	28.89	28.28
39	25.42	28.56	23.60	28.28	28.05	25.33	28.18	27.65
40	24.82	27.96	23.08	27.61	27.40	24.66	27.48	27.02
41	24.22	27.37	22.56	26.97	26.74	24.05	26.77	26.39
42	23.65	26.77	22.04	26.34	26.07	23.44	26.06	25.74
43	23.08	26.06	21.54	25.71	25.40	22.83	25.34	25.08
44	22.53	25.54	21.03	25.09	24.75	22.22	24.62	24.42
45	21.99	24.93	20.52	24.46	24.10	21.61	23.89	23.75
46	21.44	24.33	20.02	23.82	23.44	20.98	23.15	23.07
47	20.90	23.72	19.51	23.17	22.78	20.35	22.45	22.38
48	20.35	23.11	19.00	22.50	22.12	19.72	21.74	21.68
49	19.84	22.53	18.49	21.81	21.47	19.09	21.07	20.98
50	19.32	21.92	17.99	21.11	20.83	18.46	20.38	20.30
51	18.80	21.31	17.50	20.39	20.20	17.87	19.73	19.62
52	18.29	20.67	17.02	19.68	19.59	17.29	19.11	18.97

TABLE II.

Comparative View of the Expectation of Life at different Places.

Chester, Males.	Chester, Females.	North-ampton.	Carlisle.	Equitable (Davies).	Sweden, Male & Female.	Des Parcieux.	Govt. Males.	Govt. Females.
17.79	20.03	16.54	18.97	19.00	16.70	18.48	18.34	22.22
17.27	19.38	16.06	18.28	18.43	16.12	17.85	17.73	21.50
16.74	18.73	15.58	17.58	17.85	15.53	17.25	17.15	20.79
16.17	18.06	15.10	16.89	17.28	14.95	16.64	16.57	20.08
15.61	17.38	14.63	16.21	16.71	14.37	16.02	16.02	19.38
15.04	16.70	14.15	15.55	16.15	13.79	15.44	15.47	18.69
14.47	16.05	13.68	14.92	15.60	13.21	14.84	14.93	18.00
13.96	15.40	13.21	14.34	15.06	12.63	14.25	14.39	17.32
13.53	14.85	12.75	13.82	14.51	12.12	13.65	13.84	16.64
13.21	14.41	12.28	13.31	13.96	11.62	13.04	13.28	15.96
12.90	13.98	11.81	12.81	13.42	11.11	12.43	12.72	15.30
12.61	13.56	11.35	12.30	12.88	10.61	11.86	12.17	14.64
12.29	13.06	10.88	11.79	12.35	10.10	11.26	11.63	14.00
11.87	12.47	10.42	11.27	11.83	9.62	10.69	11.10	13.37
10.35	11.82	9.96	10.75	11.32	9.15	10.14	10.61	12.76
10.76	11.17	9.50	10.23	10.82	8.67	9.61	10.14	12.16
10.16	10.54	9.05	9.70	10.32	8.20	9.11	9.67	11.57
9.63	9.98	8.60	9.18	9.84	7.72	8.64	9.22	10.99
9.21	9.52	8.17	8.65	9.36	7.32	8.17	8.79	10.44
8.99	9.19	7.74	8.16	8.88	6.89	7.73	8.37	9.92
8.85	8.89	7.33	7.72	8.42	6.53	7.31	7.96	9.41
8.74	8.63	6.92	7.33	7.97	6.23	6.90	7.54	8.92
8.59	8.34	6.54	7.01	7.52	5.91	6.50	7.12	8.46
8.37	7.98	6.18	6.69	7.08	5.59	6.10	6.69	8.00
8.05	7.61	5.83	6.40	6.64	5.28	5.71	6.23	7.58
7.72	7.24	5.48	6.12	6.20	4.96	5.36	5.78	7.19
7.42	6.90	5.11	5.80	5.78	4.61	5.00	5.35	6.83
7.10	6.60	4.75	5.51	5.38	4.28	4.69	4.94	6.50
6.83	6.35	4.41	5.21	5.00	4.01	4.39	4.55	6.20
6.61	6.18	4.09	4.93	4.63	3.80	4.01	4.18	5.89
6.39	6.13	3.80	4.65	4.30	3.57	3.84	3.82	5.57
6.17	6.26	3.58	4.39	4.00	3.39	3.52	3.46	5.22
5.93	6.45	3.37	4.12	3.73	3.23	3.21	3.12	4.84
5.67	6.46	3.19	3.90	3.50	3.09	2.92	2.81	4.44
5.38	6.27	3.01	3.71	3.31	2.92	2.67	2.53	4.03
5.01	5.96	2.86	3.59	3.11	2.71	2.36	2.31	3.62
4.71	5.48	2.66	3.47	2.91	2.43	2.06	2.12	3.21
4.32	5.01	2.41	3.28	2.65	2.05	1.77	1.95	2.83
3.95	4.57	2.09	3.26	2.36	1.71	1.50	1.83	2.49
3.66	4.14	1.75	3.37	2.03	1.40	1.25	1.65	2.21
3.48	3.73	1.37	3.48	1.70	1.23	1.00	1.49	1.97
3.25	3.38	1.05	3.53	1.31	1.10	.50	1.34	1.75
3.22	3.12	.75	3.53	1.05	1.00		1.18	1.55
3.12	2.80	.50	3.46	.75			.97	1.32
2.55	2.61		3.28	.50			.75	1.12
1.94	2.10		3.07				.50	.94
1.26	1.35		2.77				.00	.75
.50	.50		2.28					.50
			1.79					
			1.30					
			.83					
			.50					

Tables from the Experience of the Amicable Corporation

Age.	Number who successively attain each Year of Age.	Decrements.	Present Value of £1 per Ann. for Life, 4 per Cent.	Single Premium for Assurance, 4 per Cent.	1 for 4
9	2125595	11691	18.4814	.25071	.
10	2113904	12895	18.3270	.25666	.
11	2101009	14077	18.1770	.26242	.
12	2086932	15234	18.0316	.26802	.
13	2071698	16781	17.8908	.27343	.
14	2054917	17673	17.7584	.27853	.
15	2037244	18946	17.6289	.28350	.
16	2018298	19780	17.5062	.28822	.
17	1998518	20984	17.3866	.29282	.
18	1977534	22139	17.2739	.29716	.
19	1955395	22997	17.1683	.30122	.
20	1932398	24027	17.0675	.30510	.
21	1908371	25018	16.9737	.30870	.
22	1883353	25957	16.8871	.31203	.
23	1857396	26425	16.8081	.31507	.
24	1830971	26325	16.7327	.31797	.
25	1804646	25537	16.6558	.32093	.
26	1779109	24097	16.5707	.32420	.
27	1755012	22185	16.4701	.32807	.
28	1732827	20343	16.3482	.33276	.
29	1712484	18780	16.2041	.33830	.
30	1693704	17884	16.0392	.34465	.
31	1675820	17317	15.8580	.35162	.
32	1658503	17576	15.6653	.35903	.
33	1640927	17963	15.4664	.36668	.
34	1622964	18630	15.2631	.37450	.
35	1604334	19361	15.0579	.38239	.
36	1584973	19915	14.8515	.39033	.
37	1565058	20326	14.6421	.39838	.
38	1544732	20708	14.4282	.40661	.
39	1524024	20216	14.2092	.41503	.
40	1503208	21288	13.9822	.42376	.
41	1482520	20723	13.7444	.43291	.
42	1461797	20977	13.4968	.44243	.
43	1440820	21286	13.2411	.45227	.
44	1419534	21794	12.9772	.46242	.
45	1397740	22567	12.7067	.47282	.
46	1375173	23592	12.4319	.48339	.
47	1351581	24888	12.1548	.49405	.
48	1326693	26542	11.8781	.50469	.
49	1300151	28173	11.6054	.51518	.
50	1271978	29641	11.3376	.52550	.
51	1242337	30843	11.0718	.53570	.
52	1211494	31682	10.8078	.54585	.
53	1179812	32484	10.5420	.55608	.
54	1147328	33384	10.2740	.56638	.

Tables from the Experience of the Amicable Corporation.

Number who successively attain each Year of Age.	Decrements.	Present Value of £1 per Ann. for Life, 4 per Cent.	Single Premium for Assurance, 4 per Cent.	Annual Premium for Assurance, 4 per Cent.
1113944	34273	10.0052	.57672	.05240
1079671	35161	9.7357	.58709	.05469
1044510	35996	9.4660	.59746	.05709
1008514	36485	9.1960	.60784	.05962
972029	36328	8.9229	.61835	.06232
935701	36312	8.6400	.62923	.06527
899389	36629	8.3484	.64044	.06851
862760	37203	8.0510	.65188	.07202
825557	37991	7.7504	.66345	.07582
787566	39371	7.4492	.67503	.07989
748195	40656	7.1548	.68635	.08417
707539	41536	6.8686	.69736	.08863
666003	42273	6.5888	.70812	.09331
623730	42752	6.3168	.71858	.09821
580978	42873	6.0529	.72874	.10332
538105	42936	5.7966	.73859	.10867
495169	42684	5.5511	.74803	.11418
452485	42007	5.3178	.75701	.11982
410478	41019	5.0965	.76552	.12557
369459	39423	4.8898	.77351	.13135
330036	37376	4.6917	.78109	.13724
292660	35225	4.5025	.78837	.14327
257435	32820	4.3233	.79526	.14939
224615	30103	4.1532	.80180	.15559
194512	27519	3.9878	.80816	.16203
166993	24854	3.8308	.81420	.16854
142139	22172	3 6806	.81998	
119967	19574	3.5353	.82557	
100393	16955	3.3936	.83102	
83438	14507	3.2465	.83667	
68931	12468	3.0869	.84281	
56463	10578	2.9194	.84926	
45885	9154	2.7360	.85631	
36731	7695	2.5546	.86329	
29036	6446	2.3609	.87073	
22590	5234	2.1560	.87862	
17356	4386	1.9184	.88775	
12970	3650	1.6697	.89732	
9320	2937	1.4167	.90705	
6383	2312	1.1513		
4071	1824	.8771		
2247	1198	.6529		
1049	649	.4549		
400	300	.2404		
100	100			

TABLE IV.

The Logarithm, and its Arithmetical Complement, of the Number wh
each year of Age, according to Dr. Price's Table of Mortality for Nort

Age.	Log l_m	Log $\frac{1}{l_m}$.	Age.	Log l_m	L
0	4.0663259	$\bar{5}$.9336741	48	3.4791432	$\bar{4}$.
1	3.9370161	$\bar{4}$.0629839	49	.4677561	.
2	.8623103	.1376897	50	.4559102	.
3	.8312937	.1687063	51	.4434195	.
4	.8092903	.1907097	52	.4303976	.
5	.7958105	.2041895	53	.4169732	.
6	.7828308	.2171692	54	.4031205	.
7	.7726883	.2273117	55	.3888114	.
8	.7645497	.2354503	56	.3740147	.
9	.7585334	.2414666	57	.3586961	.
10	.7539659	.2460341	58	.3428173	.
11	.7499681	.2500319	59	.3263359	.
12	.7460890	.2539110	60	.3092042	.
13	.7421750	.2578250	61	.2913689	.
14	.7382254	.2617746	62	.2727696	.
15	.7342396	.2657604	63	.2535803	.
16	.7302168	.2697832	64	.2335038	.
17	.7259116	.2740884	65	.2127202	.
18	.7211508	.2788492	66	.1908917	.
19	.7159198	.2840802	67	.1679078	.
20	.7102866	.2897134	68	.1436392	.
21	.7041505	.2958495	69	.1179338	.
22	.6976652	.3023348	70	.0906107	.
23	.6910815	.3089185	71	.0614525	.
24	.6843965	.3156035	72	.0301948	.
25	.6776070	.3223930	73	2.9965117	$\bar{3}$.
26	.6707096	.3292904	74	.9599948	.
27	.6637009	.3362991	75	.9201233	.
28	.6565773	.3434227	76	.8762178	.
29	.6493349	.3506651	77	.8293038	.
30	.6419696	.3580304	78	.7795965	.
31	.6344773	.3655227	79	.7275413	.
32	.6268534	.3731466	80	.6711728	.
33	.6190933	.3809067	81	.6085260	.
34	.6111921	.3888079	82	.5390761	.
35	.6031444	.3968556	83	.4608978	.
36	.5949447	.4050553	84	.3692159	.
37	.5865873	.4134127	85	.2695129	.
38	.5780659	.4219341	86	.1613680	.
39	.5693739	.4306261	87	.0453230	.
40	.5605044	.4394956	88	1.9190781	$\bar{2}$.
41	.5513280	.4486720	89	.7923917	.
42	.5418288	.4581712	90	.6627578	.
43	.5319896	.4680104	91	.5314789	.
44	.5219222	.4780778	92	.3802112	.
45	.5116160	.4883840	93	.2041200	.
46	.5010593	.4989407	94	0.9542425	$\bar{1}$.
47	.4902395	.5097605	95	.6020600	.

Proportion that die in each year by the *Northampton Table* of Mortality, also the Proportion that survive, and its Reciprocal.

Age.	Proportion which die.	Proportion which survive.	Reciprocal of ditto.	Age.	Proportion which die.	Proportion which survive.	Reciprocal of ditto.
0	.257511	.742489	1.34682	48	.025879	.974121	1.02656
1	.158035	.841965	1.18770	49	.026908	.973092	1.02765
2	.068928	.931072	1.07402	50	.028351	.971649	1.02918
3	.049403	.950597	1.05197	51	.029539	.970461	1.03044
4	.030562	.969438	1.03152	52	.030438	.969562	1.03139
5	.029445	.970555	1.03034	53	.031394	.968606	1.03241
6	.023084	.976916	1.02363	54	.032411	.967589	1.03350
7	.018565	.981435	1.01891	55	.033497	.966503	1.03466
8	.013757	.986243	1.01395	56	.034658	.965342	1.03590
9	.010462	.989538	1.01057	57	.035902	.964098	1.03723
10	.009163	.990837	1.00925	58	.037239	.962761	1.03868
11	.008892	.991108	1.00897	59	.038679	.961321	1.04024
12	.008972	.991028	1.00905	60	.040235	.959765	1.04192
13	.009053	.990947	1.00914	61	.041922	.958078	1.04375
14	.009136	.990864	1.00921	62	.043223	.956777	1.04518
15	.009220	.990780	1.00930	63	.045176	.954824	1.04731
16	.009864	.990136	1.00996	64	.046729	.953271	1.04902
17	.010902	.989098	1.01102	65	.049020	.950980	1.05155
18	.011972	.988028	1.01212	66	.051546	.948454	1.05434
19	.012887	.987113	1.01305	67	.054348	.945652	1.05747
20	.014030	.985970	1.01423	68	.057471	.942529	1.06097
21	.014822	.985178	1.01505	69	.060975	.939025	1.06493
22	.015045	.984955	1.01527	70	.064935	.935065	1.06944
23	.015275	.984725	1.01551	71	.069444	.930556	1.07463
24	.015512	.984488	1.01576	72	.074627	.925373	1.08064
25	.015756	.984244	1.01601	73	.080645	.919355	1.08772
26	.016009	.983991	1.01627	74	.087719	.912281	1.09615
27	.016269	.983731	1.01654	75	.096154	.903846	1.10638
28	.016538	.983462	1.01682	76	.102393	.897607	1.11407
29	.016816	.983184	1.01710	77	.108148	.891852	1.12126
30	.017104	.982896	1.01740	78	.112957	.887043	1.12734
31	.017401	.982599	1.01771	79	.121723	.878277	1.13859
32	.017710	.982290	1.01803	80	.134328	.865672	1.15517
33	.018029	.981971	1.01836	81	.147783	.852217	1.17341
34	.018360	.981640	1.01870	82	.164710	.835260	1.19723
35	.018704	.981296	1.01906	83	.190311	.809689	1.23504
36	.019060	.980940	1.01943	84	.205128	.794872	1.25806
37	.019430	.980570	1.01981	85	.220430	.779570	1.28276
38	.019815	.980185	1.02022	86	.234483	.765517	1.30634
39	.020216	.979784	1.02063	87	.252252	.747748	1.33735
40	.020908	.979092	1.02135	88	.253012	.746988	1.33871
41	.021635	.978365	1.02211	89	.258065	.741935	1.34783
42	.022401	.977599	1.02291	90	.260869	.739131	1.35294
43	.022914	.977086	1.02345	91	.294118	.705882	1.41667
44	.023452	.976548	1.02401	92	.333333	.666667	1.50000
45	.024015	.975985	1.02461	93	.437500	.562500	1.77778
46	.024606	.975394	1.02523	94	.555556	.444444	2.25000
47	.025227	.974773	1.02588	95	.750000	.250000	4.00000

TABLE VI.

A Preparatory Table for finding the Values of Annuities, &c., by the Nor
Table of Mortality. (3 per Cent.)

Age.	D.	N.	S.	M.
0	11650.000	142947.351	2719587.3	7147.166
1	8398.058	134549.293	2576639.9	4234.544
2	6864.926	127684.367	2442090.7	2946.015
3	6205.576	121478.791	2314406.3	2486.614
4	5727.188	115751.604	2192927.5	2188.971
5	5390.442	110361.161	2077175.9	2019.037
6	5079.342	105281.819	1966814.7	1864.940
7	4817.567	100464.252	1861532.9	1751.107
8	4590.415	95873.837	1761068.7	1664.272
9	4395.400	91478.437	1665194.8	1602.958
10	4222.733	87255.705	1573716.4	1558.313
11	4062.175	83193.530	1486460.7	1520.747
12	3908.790	79284.740	1403267.2	1485.678
13	3760.894	75523.846	1323982.4	1451.630
14	3618.298	71905.548	1248458.6	1418.574
15	3480.817	68424.731	1176553.0	1386.481
16	3348.276	65076.455	1108128.3	1355.323
17	3218.688	61857.767	1043051.8	1323.257
18	3090.870	58766.897	981194.1	1289.188
19	2964.917	55801.980	922427.2	1253.260
20	2841.464	52960.516	866625.2	1216.164
21	2719.999	50240.516	813664.7	1177.460
22	2601.634	47638.882	763424.2	1138.318
23	2487.856	45151.026	715785.3	1100.317
24	2378.500	42772.526	670634.3	1063.422
25	2273.402	40499.124	627861.7	1027.601
26	2172.410	38326.714	587362.6	992.8241
27	2075.372	36251.343	549035.9	959.0599
28	1982.143	34269.199	512784.5	926.2791
29	1892.585	32376.615	478515.3	894.4531
30	1806.562	30570.053	446138.7	863.5541
31	1723.945	28846.108	415568.7	833.5551
32	1644.607	27201.501	386722.6	804.4298
33	1568.429	25633.072	359521.1	776.1528
34	1495.293	24137.779	333888.0	748.6994
35	1425.087	22712.691	309750.2	722.0456
36	1357.703	21354.988	287037.5	696.1682
37	1293.034	20061.954	265682.5	671.0445
38	1230.981	18830.973	245620.6	646.6525
39	1171.446	17659.528	226789.6	622.9710
40	1114.334	16545.194	209130.1	599.9792
41	1059.258	15485.936	192584.9	577.3595
42	1006.156	14479.780	177099.0	555.1096
43	954.968	13524.811	162619.2	533.2273
44	905.908	12618.903	149094.4	511.9823
45	858.897	11760.007	136475.5	491.3561
46	813.855	10946.152	124715.5	471.3307
47	770.708	10175.444	113769.3	451.8885

TABLE VI.

reparatory Table for finding the Values of Annuities, &c., by the Northampton Table of Mortality. (3 per Cent.)

r.	D.	N.	S.	M.	R.
48	729.384	9446.059	103593.9	433.0126	6861.780
49	689.814	8756.245	94147.80	414.6865	6428.768
50	651.702	8104.543	85391.56	396.6660	6014.081
51	614.782	7489.762	77287.01	378.7275	5617.415
52	579.244	6910.517	69797.25	361.0965	5238.688
53	545.256	6365.262	62886.73	343.9790	4877.591
54	512.756	5852.506	56521.47	327.3600	4533.612
55	481.686	5370.820	50668.97	311.2251	4206.252
56	451.991	4918.829	45298.15	295.5601	3895.027
57	423.618	4495.211	40379.32	280.3512	3599.467
58	396.514	4098.697	35884.11	265.5855	3319.116
59	370.629	3728.068	31785.41	251.2498	3053.530
60	345.916	3382.152	28057.34	237.3317	2802.281
61	322.328	3059.824	24675.19	223.8190	2564.949
62	299.821	2760.004	21615.37	210.6998	2341.130
63	278.506	2481.497	18855.36	198.1180	2130.430
64	258.179	2223.317	16373.87	185.9027	1932.312
65	238.946	1984.371	14150.55	174.1896	1746.409
66	220.615	1763.756	12166.18	162.8177	1572.220
67	203.149	1560.608	10402.42	151.7770	1409.402
68	186.512	1374.095	8841.81	141.0579	1257.625
69	170.673	1203.422	7467.72	130.6510	1116.567
70	155.598	1047.824	6264.30	120.5472	985.916
71	141.257	906.5667	5216.47	110.7377	865.369
72	127.619	778.9479	4309.91	101.2139	754.631
73	114.655	664.2927	3530.96	91.9675	653.417
74	102.339	561.9540	2866.67	82.9904	561.450
75	90.6425	471.3115	2304.71	74.2748	478.460
76	79.5405	391.7710	1833.40	65.8130	404.185
77	69.3167	322.4543	1441.63	57.9058	338.372
78	60.0196	262.4347	1119.18	50.6277	280.466
79	51.6893	210.7454	856.74	44.0455	229.838
80	44.0751	166.6703	646.00	37.9370	185.793
81	37.0434	129.6269	479.33	32.1899	147.856
82	30.6495	98.9774	349.70	26.8740	115.667
83	24.8547	74.1227	250.72	21.9718	88.793
84	19.5384	54.5843	176.60	17.3795	66.821
85	15.0781	39.5062	122.01	13.4883	49.442
86	11.4121	28.0941	82.51	10.2614	35.953
87	8.4817	19.6124	54.41	7.66344	25.692
88	6.1574	13.4550	34.80	5.58622	18.029
89	4.4655	8.9895	21.35	4.07368	12.442
90	3.2166	5.7729	12.36	2.95484	8.369
91	2.3063	3.4846	6.584	2.14015	5.414
92	1.5819	1.8827	3.100	1.48101	3.274
93	1.0238	.8589	1.217	.969059	1.793
94	.5591	.2998	.3583	.534150	.8236
95	.2413	.0585	.0585	.232548	.2894
96	.0585	.0000	.0000	.056858	.0569

TABLE VIII.

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age One Year.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	9.4909	21	11.4132	41	9.5231	61	6.5715	81	2.6315
2	11.0159	22	11.3423	42	9.4008	62	6.3944	82	2.4396
3	11.6027	23	11.2693	43	9.2779	63	6.2107	83	2.2622
4	11.9957	24	11.1943	44	9.1516	64	6.0239	84	2.1278
5	12.1717	25	11.1171	45	9.0214	65	5.8303	85	2.0037
6	12.3469	26	11.0378	46	8.8879	66	5.6333	86	1.8907
7	12.4493	27	10.9561	47	8.7503	67	5.4334	87	1.7844
8	12.4978	28	10.8721	48	8.6087	68	5.2307	88	1.6966
9	12.4845	29	10.7856	49	8.4628	69	5.0256	89	1.5750
10	12.4261	30	10.6966	50	8.3157	70	4.8188	90	1.4176
11	12.3468	31	10.6050	51	8.1708	71	4.6110	91	1.1906
12	12.2592	32	10.5106	52	8.0256	72	4.4033	92	.9625
13	12.1675	33	10.4135	53	7.8772	73	4.1971	93	.6873
14	12.0713	34	10.3134	54	7.7254	74	3.9945	94	.4454
15	11.9705	35	10.2102	55	7.5703	75	3.7967	95	.2044
16	11.8648	36	10.1039	56	7.4120	76	3.6145	96	.0000
17	11.7607	37	9.9944	57	7.2503	77	3.4298		
18	11.6634	38	9.8813	58	7.0853	78	3.2397		
19	11.5734	39	9.7648	59	6.9172	79	3.0360		
20	11.4890	40	9.6444	60	6.7459	80	2.8299		

Younger Age Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
2	12.7897	22	13.1722	42	10.9075	62	7.3909	82	2.7774
3	13.4736	23	13.0873	43	10.7638	63	7.1758	83	2.5731
4	13.9316	24	12.9999	44	10.6162	64	6.9571	84	2.4179
5	14.1374	25	12.9101	45	10.4642	65	6.7305	85	2.2747
6	14.3417	26	12.8176	46	10.3076	66	6.5000	86	2.1443
7	14.4612	27	12.7225	47	10.1471	67	6.2659	87	2.0215
8	14.5177	28	12.6246	48	9.9816	68	6.0288	88	1.9193
9	14.5022	29	12.5238	49	9.8111	69	5.7890	89	1.7784
10	14.4341	30	12.4200	50	9.6391	70	5.5472	90	1.5969
11	14.3418	31	12.3132	51	9.4697	71	5.3044	91	1.3462
12	14.2397	32	12.2031	52	9.2999	72	5.0618	92	1.0772
13	14.1328	33	12.0898	53	9.1262	73	4.8211	93	.7661
14	14.0208	34	11.9730	54	8.9487	74	4.5848	94	.4945
15	13.9034	35	11.8526	55	8.7673	75	4.3565	95	.2260
16	13.7802	36	11.7285	56	8.5820	76	4.1415	96	.0000
17	13.6591	37	11.6006	57	8.3928	77	3.9261		
18	13.5458	38	11.4686	58	8.1998	78	3.7046		
19	13.4411	39	11.3325	59	8.0029	79	3.4679		
20	13.3429	40	11.1920	60	7.8024	80	3.2288		
21	13.2548	41	11.0502	61	7.5983	81	2.9991		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Three Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
14.1960	23	13.7944	43	11.3429	63	7.5456	83	2.6786
14.6799	24	13.7024	44	11.1868	64	7.3138	84	2.5155
14.8977	25	13.6078	45	11.0262	65	7.0736	85	2.3651
15.1139	26	13.5104	46	10.8609	66	6.8294	86	2.2280
15.2404	27	13.4102	47	10.6905	67	6.5814	87	2.0988
15.3003	28	13.3070	48	10.5158	68	6.3301	88	1.9907
15.2842	29	13.2008	49	10.3355	69	6.0760	89	1.8423
15.2127	30	13.0914	50	10.1536	70	5.8199	90	1.6517
15.1154	31	12.9788	51	9.9744	71	5.5628	91	1.3900
15.0080	32	12.8627	52	9.7947	72	5.3059	92	1.1098
14.8953	33	12.7431	53	9.6110	73	5.0512	93	.7875
14.7773	34	12.6199	54	9.4231	74	4.8011	94	.5067
14.6535	35	12.4928	55	9.2311	75	4.5596	95	.2307
14.5238	36	12.3619	56	9.0349	76	4.3320	96	.0000
14.3962	37	12.2268	57	8.8347	77	4.1041		
14.2769	38	12.0875	58	8.6303	78	3.8699		
14.1667	39	11.9437	59	8.4218	79	3.6200		
14.0633	40	11.7953	60	8.2095	80	3.3680		
13.9706	41	11.6455	61	7.9933	81	3.1262		
13.8837	42	11.4947	62	7.7735	82	2.8931		

Younger Age Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.1812	24	14.1784	44	11.5786	64	7.5627	84	2.5845
15.4075	25	14.0809	45	11.4123	65	7.3132	85	2.4290
15.6318	26	13.9805	46	11.2411	66	7.0595	86	2.2872
15.7633	27	13.8771	47	11.0650	67	6.8020	87	2.1535
15.8258	28	13.7706	48	10.8832	68	6.5409	88	2.0412
15.8096	29	13.6610	49	10.6968	69	6.2770	89	1.8875
15.7360	30	13.5481	50	10.5084	70	6.0110	90	1.6906
15.6358	31	13.4318	51	10.3228	71	5.7440	91	1.4213
15.5250	32	13.3119	52	10.1365	72	5.4772	92	1.1336
15.4088	33	13.1884	53	9.9461	73	5.2127	93	.8037
15.2870	34	13.0610	54	9.7513	74	4.9532	94	.5169
15.1593	35	12.9298	55	9.5522	75	4.7024	95	.2353
15.0253	36	12.7944	56	9.3488	76	4.4660	96	.0000
14.8937	37	12.6547	57	9.1411	77	4.2293		
14.7707	38	12.5106	58	8.9291	78	3.9862		
14.6569	39	12.3619	59	8.7129	79	3.7271		
14.5504	40	12.2083	60	8.4925	80	3.4660		
14.4549	41	12.0534	61	8.2681	81	3.2157		
14.3653	42	11.8973	62	8.0399	82	2.9747		
14.2732	43	11.7402	63	7.8033	83	2.7530		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
5	15.6381	25	14.3015	45	11.5973	65	7.4290	85	2
6	15.8666	26	14.2000	46	11.4236	66	7.1706	86	2
7	16.0008	27	14.0955	47	11.2447	67	6.9082	87	2
8	16.0649	28	13.9878	48	11.0605	68	6.6422	88	2
9	16.0490	29	13.8769	49	10.8703	69	6.3733	89	1
10	15.9748	30	13.7627	50	10.6793	70	6.1022	90	1
11	15.8736	31	13.6450	51	10.4907	71	5.8501	91	1
12	15.7616	32	13.5286	52	10.3015	72	5.5582	92	1
13	15.6441	33	13.3985	53	10.1079	73	5.2887	93	
14	15.5209	34	13.2695	54	9.9099	74	5.0242	94	
15	15.3917	35	13.1365	55	9.7075	75	4.7686	95	
16	15.2562	36	12.9993	56	9.5007	76	4.5277	96	
17	15.1230	37	12.8578	57	9.2895	77	4.2863		
18	14.9985	38	12.7117	58	9.0738	78	4.0384		
19	14.8836	39	12.5609	59	8.8538	79	3.7745		
20	14.7759	40	12.4051	60	8.6296	80	3.5087		
21	14.6794	41	12.2480	61	8.4013	81	3.2540		
22	14.5889	42	12.0896	62	8.1690	82	3.0090		
23	14.4959	43	11.9302	63	7.9281	83	2.7839		
24	14.4001	44	11.7662	64	7.6830	84	2.6125		

Younger Age Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	
6	16.0993	26	14.4204	46	11.6105	66	7.2904	86	
7	16.2363	27	14.3149	47	11.4291	67	7.0234	87	
8	16.3021	28	14.2062	48	11.2422	68	6.7526	88	
9	16.2867	29	14.0942	49	11.0497	69	6.4789	89	
10	16.2121	30	13.9788	50	10.8551	70	6.2029	90	
11	16.1100	31	13.8598	51	10.6641	71	5.9257	91	
12	15.9970	32	13.7371	52	10.4721	72	5.6489	92	
13	15.8784	33	13.6107	53	10.2756	73	5.3743	93	
14	15.7540	34	13.4802	54	10.0746	74	5.1049	94	
15	15.6234	35	13.3457	55	9.8691	75	4.8446	95	
16	15.4864	36	13.2068	56	9.6591	76	4.5991	96	
17	15.3519	37	13.0635	57	9.4446	77	4.3531		
18	15.2261	38	12.9157	58	9.2255	78	4.1004		
19	15.1100	39	12.7629	59	9.0020	79	3.8315		
20	15.0014	40	12.6052	60	8.7742	80	3.5608		
21	14.9040	41	12.4460	61	8.5421	81	3.3014		
22	14.8128	42	12.2856	62	8.3060	82	3.0521		
23	14.7190	43	12.1240	63	8.0610	83	2.8231		
24	14.6224	44	11.9578	64	7.8118	84	2.6488		
25	14.5229	45	11.7867	65	7.5533	85	2.4880		

Valce of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
7	16.3752	27	14.4514	47	11.5502	67	7.1043	87	2.2248
8	16.4424	28	14.3424	48	11.3619	68	6.8306	88	2.1063
9	16.4276	29	14.2300	49	11.1680	69	6.5537	89	1.9444
10	16.3532	30	14.1142	50	10.9723	70	6.2745	90	1.7377
11	16.2511	31	13.9948	51	10.7789	71	5.9941	91	1.4570
12	16.1378	32	13.8717	52	10.5858	72	5.7139	92	1.1586
13	16.0189	33	13.7447	53	10.3877	73	5.4361	93	.8189
14	15.8941	34	13.6137	54	10.1851	74	5.1634	94	.5249
15	15.7632	35	13.4785	55	9.9779	75	4.8999	95	.2382
16	15.6257	36	13.3390	56	9.7660	76	4.6512	96	.0000
17	15.4906	37	13.1950	57	9.5496	77	4.4021		
18	15.3644	38	13.0463	58	9.3286	78	4.1462		
19	15.2480	39	12.8927	59	9.1030	79	3.8738		
20	15.1391	40	12.7341	60	8.8731	80	3.5996		
21	15.0415	41	12.5740	61	8.6388	81	3.3369		
22	14.9503	42	12.4125	62	8.4003	82	3.0844		
23	14.8563	43	12.2500	63	8.1529	83	2.8526		
24	14.7595	44	12.0826	64	7.9011	84	2.6761		
25	14.6598	45	11.9103	65	7.6400	85	2.5134		
26	14.5571	46	11.7329	66	7.3742	86	2.3649		

Younger Age Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	16.5106	28	14.4173	48	11.4354	68	6.8843	88	2.1225
9	16.4967	29	14.3052	49	11.2409	69	6.6057	89	1.9592
10	16.4228	30	14.1896	50	11.0447	70	6.3246	90	1.7505
11	16.3211	31	14.0704	51	10.8512	71	6.0423	91	1.4673
12	16.2082	32	13.9474	52	10.6566	72	5.7601	92	1.1663
13	16.0897	33	13.8206	53	10.4584	73	5.4803	93	.8239
14	15.9652	34	13.6897	54	10.2551	74	5.2056	94	.5278
15	15.8345	35	13.5546	55	10.0471	75	4.9400	95	.2394
16	15.6971	36	13.4151	56	9.8345	76	4.6894	96	.0000
17	15.5623	37	13.2711	57	9.6173	77	4.4382		
18	15.4363	38	13.1223	58	9.3954	78	4.1802		
19	15.3201	39	12.9687	59	9.1689	79	3.9054		
20	15.2115	40	12.8099	60	8.9379	80	3.6290		
21	15.1143	41	12.6496	61	8.7025	81	3.3639		
22	15.0234	42	12.4880	62	8.4630	82	3.1093		
23	14.9297	43	12.3252	63	8.2143	83	2.8755		
24	14.8333	44	12.1576	64	7.9612	84	2.6975		
25	14.7339	45	11.9850	65	7.6986	85	2.5333		
26	14.6315	46	11.8073	66	7.4313	86	2.3836		
27	14.5260	47	11.6241	67	7.1597	87	2.2422		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9	16.4837	27	14.5293	45	12.0020	63	8.2377	81	3.3780
10	16.4108	28	14.4214	46	11.8248	64	7.9846	82	3.1294
11	16.3101	29	14.3102	47	11.6422	65	7.7220	83	2.8877
12	16.1982	30	14.1954	48	11.4540	66	7.4546	84	2.7080
13	16.0806	31	14.0770	49	11.2601	67	7.1828	85	2.5442
14	15.9571	32	13.9549	50	11.0643	68	6.9071	86	2.3938
15	15.8273	33	13.8289	51	10.8713	69	6.6282	87	2.2518
16	15.6909	34	13.6988	52	10.6776	70	6.3467	88	2.1316
17	15.5569	35	13.5645	53	10.4788	71	6.0639	89	1.9675
18	15.4319	36	13.4258	54	10.2764	72	5.7813	90	1.7578
19	15.3165	37	13.2825	55	10.0688	73	5.5009	91	1.4733
20	15.2087	38	13.1345	56	9.8566	74	5.2255	92	1.1700
21	15.1124	39	12.9816	57	9.6396	75	4.9593	93	.8270
22	15.0224	40	12.8235	58	9.4180	76	4.7080	94	.5297
23	14.9296	41	12.6639	59	9.1917	77	4.4561	95	.2403
24	14.8340	42	12.5030	60	8.9610	78	4.1972	96	.0000
25	14.7355	43	12.3409	61	8.7258	79	3.9215		
26	14.6340	44	12.1739	62	8.4863	80	3.6440		

Younger Age Ten Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
10	16.3391	28	14.3735	46	11.8001	64	7.9803	82	3.1259
11	16.2398	29	14.2635	47	11.6188	65	7.7185	83	2.8911
12	16.1293	30	14.1501	48	11.4319	66	7.4520	84	2.7123
13	16.0132	31	14.0330	49	11.2391	67	7.1811	85	2.5474
14	15.8911	32	13.9121	50	11.0446	68	6.9062	86	2.3970
15	15.7627	33	13.7874	51	10.8528	69	6.6280	87	2.2549
16	15.6277	34	13.6586	52	10.6603	70	6.3472	88	2.1346
17	15.4952	35	13.5256	53	10.4631	71	6.0650	89	1.9703
18	15.3715	36	13.3882	54	10.2608	72	5.7829	90	1.7603
19	15.2575	37	13.2463	55	10.0549	73	5.5030	91	1.4755
20	15.1510	38	13.0996	56	9.8438	74	5.2280	92	1.1796
21	15.0559	39	12.9480	57	9.6279	75	4.9622	93	.8282
20	14.9670	40	12.7912	58	9.4074	76	4.7112	94	.5304
	4.8755	41	12.6329	59	9.1823	77	4.4595	95	.2405
21	14.7811	42	12.4733	60	8.9526	78	4.2008	96	.0000
22	14..								
23	14.[illegible]838	43	12.3124	61	8.7184	79	3.9252		
24	14.6236	44	12.1468	62	8.4800	80	3.6476		
25	14.5242	45	11.9760	63	8.2324	81	3.3816		

lue of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Eleven Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
420	29	14.1929	47	11.5760	65	7.7023	83	2.8903
331	30	14.0809	48	11.3906	66	7.4372	84	2.7117
186	31	13.9653	49	11.1994	67	7.1676	95	2.5471
982	32	13.8460	50	11.0064	68	6.8940	86	2.3969
715	33	13.7227	51	10.8161	69	6.6169	87	2.2550
382	34	13.5955	52	10.6251	70	6.3373	88	2.1348
073	35	13.4640	53	10.4295	71	6.0563	89	1.9706
852	36	13.3282	54	10.2292	72	5.7752	90	1.7606
727	37	13.1878	55	10.0236	73	5.4963	91	1.4758
676	38	13.0427	56	9.8146	74	5.2223	92	1.1728
739	39	12.8926	57	9.6002	75	4.9572	93	.8284
864	40	12.7375	58	9.3812	76	4.7071	94	.5305
963	41	12.5807	59	9.1575	77	4.4561	95	.2406
033	42	12.4226	60	8.9292	78	4.1979	96	.0000
074	43	12.2634	61	8.6965	79	3.9229		
086	44	12.0993	62	8.4596	80	3.6458		
066	45	11.9301	63	8.2134	81	3.3802		
014	46	11.7557	64	7.9627	82	3.1248		

Younger Age Twelve Years.

e.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
259	30	14.0021	48	11.3415	66	7.4172	84	2.7097
131	31	13.8881	49	11.1521	67	7.1491	85	2.5454
944	32	13.7704	50	10.9607	68	6.8769	86	2.3955
695	33	13.6487	51	10.7721	69	6.6013	87	2.2539
380	34	13.5231	52	10.5827	70	6.3231	88	2.1340
088	35	13.3932	53	10.3887	71	6.0434	89	1.9701
884	36	13.2590	54	10.1901	72	5.7636	90	1.7603
775	37	13.1203	55	9.9867	73	5.4859	91	1.4755
740	38	12.9769	56	9.7780	74	5.2130	92	1.1727
817	39	12.8285	57	9.5659	75	4.9490	93	.8283
956	40	12.6750	58	9.3485	76	4.6998	94	.5305
069	41	12.5200	59	9.1264	77	4.4498	95	.2405
154	42	12.3635	60	8.8998	78	4.1925	96	.0000
210	43	12.2059	61	8.6687	79	3.9182		
237	44	12.0435	62	8.4333	80	3.6418		
232	45	11.8760	63	8.1887	81	3.3768		
196	46	11.7033	64	7.9395	82	3.1220		
126	47	11.5252	65	7.6808	83	2.8879		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Thirteen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
13	15.7021	31	13.8060	49	11.1007	67	7.1278	85	2
14	15.5851	32	13.6899	50	10.9111	68	6.8572	86	2
15	15.4620	33	13.5699	51	10.7241	69	6.5832	87	2
16	15.3323	34	13.4459	52	10.5364	70	6.3065	88	2
17	15.2049	35	13.3177	53	10.3441	71	6.0281	89	1
18	15.0862	36	13.1852	54	10.1472	72	5.7498	90	1
19	14.9769	37	13.0482	55	9.9455	73	5.4733	91	1
20	14.8750	38	12.9065	56	9.7392	74	5.2017	92	1
21	14.7842	39	12.7598	57	9.5273	75	4.9390	93	
22	14.6996	40	12.6081	58	9.3123	76	4.6909	94	
23	14.6124	41	12.4548	59	9.0919	77	4.4419	95	
24	14.5224	42	12.3000	60	8.8670	78	4.1856	96	
25	14.4295	43	12.1442	61	8.6375	79	3.9122		
26	14.3337	44	11.9834	62	8.4038	80	3.6367		
27	14.2347	45	11.8177	63	8.1609	81	3.3724		
28	14.1327	46	11.6467	64	7.9134	82	3.1182		
29	14.0273	47	11.4704	65	7.6563	83	2.8847		
30	13.9184	48	11.2884	66	7.3943	84	2.7069		

Younger Age Fourteen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
14	15.4700	32	13.6042	50	10.8572	68	6.8345	86	2
15	15.3487	33	13.4859	51	10.6720	69	6.5621	87	2
16	15.2209	34	13.3636	52	10.4861	70	6.2870	88	2
17	15.0953	35	13.2372	53	10.2955	71	6.0102	89	1
18	14.9783	36	13.1064	54	10.1003	72	5.7333	90	1
19	14.8708	37	12.9711	55	9.9004	73	5.4583	91	1
20	14.7704	38	12.8312	56	9.6958	74	5.1881	92	1
21	14.6812	39	12.6863	57	9.4864	75	4.9266	93	
22	14.5981	40	12.5363	58	9.2716	76	4.6797	94	
23	14.5123	41	12.3848	59	9.0537	77	4.4319	95	
24	14.4238	42	12.2319	60	8.8305	78	4.1768	96	
25	14.3325	43	12.0777	61	8.6028	79	3.9045		
26	14.2382	44	11.9188	62	8.3708	80	3.6300		
27	14.1409	45	11.7548	63	8.1296	81	3.3666		
28	14.0404	46	11.5857	64	7.8838	82	3.1132		
29	13.9366	47	11.4111	65	7.6284	83	2.8803		
30	13.8294	48	11.2310	66	7.3682	84	2.7031		
31	13.7187	49	11.0450	67	7.1034	85	2.5397		

Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Fifteen Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
33	13.3965	51	10.6154	69	6.5376	87	2.2463
34	13.2760	52	10.4312	70	6.2642	88	2.1278
35	13.1513	53	10.2424	71	5.9891	89	1.9653
36	13.0223	54	10.0490	72	5.7138	90	1.7569
37	12.8888	55	9.8509	73	5.4404	91	1.4734
38	12.7506	56	9.6481	74	5.1716	92	1.1715
39	12.6076	57	9.4406	75	4.9116	93	.8278
40	12.4595	58	9.2283	76	4.6660	94	.5303
41	12.3098	59	9.0105	77	4.4195	95	.2405
42	12.1586	60	8.7900	78	4.1656	96	.0000
43	12.0063	61	8.5641	79	3.8946		
44	11.8492	62	8.3339	80	3.6213		
45	11.6871	63	8.0945	81	3.3589		
46	11.5198	64	7.8505	82	3.1064		
47	11.3471	65	7.5969	83	2.8744		
48	11.1688	66	7.3385	84	2.6978		
49	10.9847	67	7.0755	85	2.5350		
50	10.7987	68	6.8083	86	2.3865		

Younger Age Sixteen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
34	13.1825	52	10.3715	70	6.2378	88	2.1230
35	13.0596	53	10.1845	71	5.9644	89	1.9613
36	12.9324	54	9.9930	72	5.6908	90	1.7537
37	12.8008	55	9.7967	73	5.4190	91	1.4711
38	12.6645	56	9.5958	74	5.1519	92	1.1700
39	12.5233	57	9.3901	75	4.8933	93	.8269
40	12.3771	58	9.1797	76	4.6492	94	.5298
41	12.2293	59	8.9647	77	4.4041	95	.2403
42	12.0800	60	8.7441	78	4.1516	96	.0000
43	11.9296	61	8.5210	79	3.8820		
44	11.7743	62	8.2927	80	3.6099		
45	11.6141	63	8.0551	81	3.3488		
46	11.4487	64	7.8130	82	3.0974		
47	11.2779	65	7.5613	83	2.8663		
48	11.1015	66	7.3047	84	2.6905		
49	10.9194	67	7.0436	85	2.5284		
50	10.7353	68	6,7783	86	2.3805		
51	10.5538	69	6.5094	87	2.2409		

Value of an Annuity on Two joint Lives. (Northampton 3 per Ce

Younger Age Seventeen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
17	14.7378	37	12.7145	57	9.3405	77	4.
18	14.6262	38	12.5800	58	9.1319	78	4.
19	14.5238	39	12.4407	59	8.9187	79	3.
20	14.4284	40	12.2963	60	8.7009	80	3.
21	14.3439	41	12.1504	61	8.4775	81	3.
22	14.2654	42	12.0030	62	8.2520	82	3.
23	14.1843	43	11.8543	63	8.0162	83	2.
24	14.1005	44	11.7009	64	7.7759	84	2.
25	14.0140	45	11.5425	65	7.5260	85	2.
26	13.9246	46	11.3789	66	7.2712	86	2.
27	13.8322	47	11.2100	67	7.0118	87	2.
28	13.7366	48	11.0355	68	6.7483	88	2.
29	13.6379	49	10.8553	69	6.4811	89	1.
30	13.5358	50	10.6731	70	6.2112	90	1.
31	13.4301	51	10.4934	71	5.9395	91	1.
32	13.3209	52	10.3129	72	5.6676	92	1.
33	13.2078	53	10.1277	73	5.3974	93	.
34	13.0908	54	9.9380	74	5.1317	94	.
35	12.9697	55	9.7435	75	4.8746	95	.
36	12.8443	56	9.5444	76	4.6318	96	.

Younger Age Eighteen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
18	14.5164	38	12.5027	58	9.0889	78	4.
19	14.4156	39	12.3651	59	8.8774	79	3.
20	14.3218	40	12.2225	60	8.6612	80	3.
21	14.2389	41	12.0783	61	8.4405	81	3.
22	14.1618	42	11.9326	62	8.2144	82	3.
23	14.0822	43	11.7857	63	7.9814	83	2.
24	14.0000	44	11.6340	64	7.7427	84	2.
25	13.9150	45	11.4774	65	7.4944	85	2.
26	13.8272	46	11.3156	66	7.2412	86	2.
27	13.7363	47	11.1484	67	6.9834	87	2.
28	13.6424	48	10.9757	68	6.7214	88	2.
29	13.5452	49	10.7972	69	6.4558	89	1.
30	13.4448	50	10.6168	70	6.1874	90	1.
31	13.3408	51	10.4387	71	5.9172	91	1.
32	13.2332	52	10.2599	72	5.6467	92	1.
33	13.1218	53	10.0765	73	5.3779	93	.
34	13.0065	54	9.8884	74	5.1136	94	.
35	12.8871	55	9.6956	75	4.8577	95	.
36	12.7635	56	9.4981	76	4.6162	96	.
37	12.6354	57	9.2959	77	4.3736		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Nineteen Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
19	14.3164	39	12.2973	59	8.8415	79	3.8462
20	14.2242	40	12.1563	60	8.6268	80	3.5776
21	14.1427	41	12.0138	61	8.4076	81	3.3196
22	14.0671	42	11.8698	62	8.1841	82	3.0711
23	13.9889	43	11.7246	63	7.9502	83	2.8426
24	13.9082	44	11.5745	64	7.7141	84	2.6688
25	13.8247	45	11.4195	65	7.4673	85	2.5085
26	13.7383	46	11.2594	66	7.2155	86	2.3623
27	13.6491	47	11.0939	67	6.9591	87	2.2243
28	13.5567	48	10.9228	68	6.6985	88	2.1079
29	13.4611	49	10.7459	69	6.4342	89	1.9481
30	13.3622	50	10.5671	70	6.1671	90	1.7428
31	13.2598	51	10.3907	71	5.8982	91	1.4628
32	13.1538	52	10.2134	72	5.6289	92	1.1641
33	13.0440	53	10.0315	73	5.3613	93	.8233
34	12.9304	54	9.8450	74	5.0981	94	.5279
35	12.8126	55	9.6537	75	4.8434	95	.2396
36	12.6906	56	9.4578	76	4.6028	96	.0000
37	12.5642	57	9.2571	77	4.3612		
38	12.4332	58	9.0516	78	4.1123		

Younger Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
20	14.1335	40	12.0963	60	8.5969	80	3.5695
21	14.0534	41	11.9554	61	8.3790	81	3.3123
22	13.9792	42	11.8130	62	8.1568	82	3.0645
23	13.9025	43	11.6693	63	7.9254	83	2.8366
24	13.8231	44	11.5209	64	7.6881	84	2.6633
25	13.7411	45	11.3674	65	7.4439	85	2.5034
26	13.6563	46	11.2089	66	7.1933	86	2.3576
27	13.5685	47	11.0449	67	6.9382	87	2.2200
28	13.4776	48	10.8754	68	6.6788	88	2.1039
29	13.3835	49	10.7001	69	6.4157	89	1.9445
30	13.2862	50	10.5229	70	6.1497	90	1.7397
31	13.1853	51	10.3480	71	5.8819	91	1.4604
32	13.0809	52	10.1722	72	5.6137	92	1.1623
33	12.9728	53	9.9917	73	5.3472	93	.8221
34	12.8607	54	9.8066	74	5.0850	94	.5272
35	12.7445	55	9.6168	75	4.8311	95	.2393
36	12.6241	56	9.4223	76	4.5915	96	.0000
37	12.4993	57	9.2230	77	4.3507		
38	12.3699	58	9.0190	78	4.1026		
39	12.2356	59	8.8102	79	3.8373		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cen

Younger Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
21	13.9747	41	11.9063	61	8.3573	81	3.3
22	13.9018	42	11.7654	62	8.1362	82	3.0
23	13.8265	43	11.6233	63	7.9060	83	2.8
24	13.7486	44	11.4763	64	7.6711	84	2.6
25	13.6679	45	11.3244	65	7.4251	85	2.5
26	13.5845	46	11.1673	66	7.1771	86	2.3
27	13.4982	47	11.0048	67	6.9230	87	2.2
28	13.4088	48	10.8368	68	6.6645	88	2.1
29	13.3162	49	10.6629	69	6.4024	89	1.9
30	13.2203	50	10.4871	70	6.1374	90	1.7
31	13.1210	51	10.3135	71	5.8705	91	1.4
32	13.0181	52	10.1391	72	5.6031	92	1.1
33	12.9114	53	9.9600	73	5.3374	93	.8
34	12.8009	54	9.7762	74	5.0759	94	.5
35	12.6862	55	9.5877	75	4.8228	95	.3
36	12.5674	56	9.3945	76	4.5838	96	.0
37	12.4441	57	9.1964	77	4.3437		
38	12.3162	58	8.9936	78	4.0961		
39	12.1835	59	8.7861	79	3.8315		
40	12.0457	60	8.5740	80	3.5643		

Younger Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age	Value.	Age.	V
22	13.8303	42	11.7233	62	8.1198	82	3.0
23	13.7563	43	11.5826	63	7.8906	83	2.8
24	13.6798	44	11.4371	64	7.6568	84	2.6
25	13.6006	45	11.2866	65	7.4132	85	2.4
26	13.5185	46	11.1309	66	7.1631	86	2.3
27	13.4336	47	10.9699	67	6.9115	87	2.
28	13.3457	48	10.8032	68	6.6539	88	2.
29	13.2546	49	10.6308	69	6.3926	89	1.9
30	13.1602	50	10.4563	70	6.1284	90	1.
31	13.0623	51	10.2841	71	5.8622	91	1.4
32	12.9609	52	10.1110	72	5.5956	92	1.
33	12.8557	53	9.9332	73	5.3305	93	.8
34	12.7467	54	9.7507	74	5.0697	94	.5
35	12.6336	55	9.5634	75	4.8171	95	.3
36	12.5162	56	9.3713	76	4.5786	96	.0
37	12.3945	57	9.1745	77	4.3390		
38	12.2681	58	8.9729	78	4.0920		
39	12.1369	59	8.7665	79	3.8278		
40	12.0006	60	8.5555	80	3.5610		
41	11.8627	61	8.3399	81	3.3047		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
23	13.6837	43	11.5403	63	7.8748	83	2.8282
24	13.6086	44	11.3963	64	7.6419	84	2.6557
25	13.5308	45	11.2473	65	7.3994	85	2.4965
26	13.4502	46	11.0932	66	7.1519	86	2.3514
27	13.3668	47	10.9336	67	6.8996	87	2.2144
28	13.2803	48	10.7684	68	6.6429	88	2.0989
29	13.1907	49	10.5974	69	6.3825	89	1.9402
30	13.0978	50	10.4244	70	6.1191	90	1.7362
31	13.0015	51	10.2535	71	5.8537	91	1.4576
32	12.9016	52	10.0818	72	5.5878	92	1.1603
33	12.7980	53	9.9053	73	5.3234	93	.8208
34	12.6905	54	9.7241	74	5.0632	94	.5264
35	12.5789	55	9.5381	75	4.8113	95	.2390
36	12.4632	56	9.3474	76	4.5733	96	.0000
37	12.3429	57	9.1518	77	4.3342		
38	12.2181	58	8.9514	78	4.0877		
39	12.0885	59	8.7462	79	3.8240		
40	11.9538	60	8.5363	80	3.5576		
41	11.8174	61	8.3218	81	3.3017		
42	11.6795	62	8.1029	82	3.0551		

Younger Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	13.5349	44	11.3540	64	7.6265	84	2.6535
25	13.4586	45	11.2066	65	7.3851	85	2.4946
26	13.3795	46	11.0539	66	7.1386	86	2.3197
27	13.2975	47	10.8959	67	6.8872	87	2.2129
28	13.2126	48	10.7322	68	6.6315	88	2.0976
29	13.1245	49	10.5628	69	6.3720	89	1.9390
30	13.0332	50	10.3912	70	6.1094	90	1.7353
31	12.9384	51	10.2218	71	5.8449	91	1.4569
32	12.8401	52	10.0514	72	5.5797	92	1.1599
33	12.7381	53	9.8763	73	5.3161	93	.8205
34	12.6322	54	9.6965	74	5.0566	94	.5263
35	12.5222	55	9.5119	75	4.8053	95	.2390
36	12.4081	56	9.3224	76	4.5679	96	.0000
37	12.2895	57	9.1281	77	4.3293		
38	12.1663	58	8.9290	78	4.0833		
39	12.0382	59	8.7251	79	3.8201		
40	11.9052	60	8.5164	80	3.5542		
41	11.7704	61	8.3031	81	3.2986		
42	11.6341	62	8.0853	82	3.0524		
43	11.4965	63	7.8583	83	2.8258		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	13.3837	45	11.1642	65	7.3702	85	2.4926
26	13.3062	46	11.0131	66	7.1248	86	2.3479
27	13.2257	47	10.8567	67	6.8745	87	2.2113
28	13.1423	48	10.6946	68	6.6197	88	2.0962
29	13.0558	49	10.5267	69	6.3612	89	1.9379
30	12.9661	50	10.3566	70	6.0995	90	1.7343
31	12.8730	51	10.1888	71	5.8358	91	1.4562
32	12.7763	52	10.0199	72	5.5714	92	1.1594
33	12.6759	53	9.8462	73	5.3085	93	.8202
34	12.5716	54	9.6678	74	5.0497	94	.5261
35	12.4634	55	9.4846	75	4.7990	95	.2389
36	12.3508	56	9.2965	76	4.5622	96	.0000
37	12.2339	57	9.1036	77	4.3242		
38	12.1124	58	8.9058	78	4.0787		
39	11.9860	59	8.7031	79	3.8160		
40	11.8546	60	8.4957	80	3.5506		
41	11.7215	61	8.2836	81	3.2955		
42	11.5868	62	8.0670	82	3.0496		
43	11.4508	63	7.8412	83	2.8233		
44	11.3100	64	7.6106	84	2.6513		

Younger Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	13.2301	46	10.9706	66	7.1104	86	2.3461
27	13.1513	47	10.8158	67	6.8612	87	2.2097
28	13.0695	48	10.6554	68	6.6075	88	2.0948
29	12.9846	49	10.4891	69	6.3499	89	1.9367
30	12.8965	50	10.3207	70	6.0891	90	1.7334
31	12.8050	51	10.1543	71	5.8263	91	1.4555
32	12.7100	52	9.9870	72	5.5628	92	1.1589
33	12.6113	53	9.8148	73	5.3006	93	.8199
34	12.5087	54	9.6379	74	5.0426	94	.5260
35	12.4021	55	9.4562	75	4.7926	95	.2388
36	12.2914	56	9.2695	76	4.5564	96	.0000
37	12.1761	57	9.0780	77	4.3189		
38	12.0563	58	8.8816	78	4.0740		
39	11.9317	59	8.6803	79	3.8118		
40	11.8020	60	8.4742	80	3.5469		
41	11.6706	61	8.2634	81	3.2922		
42	11.5377	62	8.0480	82	3.0467		
43	11.4033	63	7.8234	83	2.8208		
44	11.2642	64	7.5940	84	2.6490		
45	11.1200	65	7.3548	85	2.4906		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.

Younger Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	13.0740	47	10.7733	67	6.8474	87	2.2080
28	12.9939	48	10.6146	68	6.5948	88	2.0933
29	12.9106	49	10.4499	69	6.3382	89	1.9354
30	12.8242	50	10.2832	70	6.0784	90	1.7324
31	12.7344	51	10.1185	71	5.8165	91	1.4548
32	12.6411	52	9.9527	72	5.5538	92	1.1584
33	12.5441	53	9.7821	73	5.2925	93	.8196
34	12.4433	54	9.6067	74	5.0352	94	.5258
35	12.3385	55	9.4265	75	4.7859	95	.2388
36	12.2295	56	9.2414	76	4.5503	96	.0000
37	12.1160	57	9.0513	77	4.3135		
38	11.9980	58	8.8563	78	4.0691		
39	11.8752	59	8.6564	79	3.8075		
40	11.7473	60	8.4517	80	3.5431		
41	11.6177	61	8.2423	81	3.2888		
42	11.4865	62	8.0282	82	3.0437		
43	11.3539	63	7.8049	83	2.8182		
44	11.2165	64	7.5767	84	2.6467		
45	11.0740	65	7.3387	85	2.4885		
46	10.9264	66	7.0955	86	2.3442		

Younger Age Twenty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
28	12.9153	48	10.5719	68	6.5815	88	2.0918
29	12.8338	49	10.4091	69	6.3260	89	1.9341
30	12.7490	50	10.2440	70	6.0672	90	1.7313
31	12.6610	51	10.0810	71	5.8063	91	1.4540
32	12.5695	52	9.9168	72	5.5445	92	1.1579
33	12.4743	53	9.7479	73	5.2840	93	.8193
34	12.3753	54	9.5742	74	5.0275	94	.5256
35	12.2722	55	9.3955	75	4.7789	95	.2387
36	12.1651	56	9.2119	76	4.5440	96	.0000
37	12.0535	57	9.0234	77	4.3078		
38	11.9373	58	8.8299	78	4.0640		
39	11.8163	59	8.6315	79	3.8030		
40	11.6903	60	8.4282	80	3.5391		
41	11.5625	61	8.2202	81	3.2853		
42	11.4331	62	8.0075	82	3.0407		
43	11.3023	63	7.7856	83	2.8155		
44	11.1667	64	7.5586	84	2.6443		
45	11.0260	65	7.3219	85	2.4863		
46	10.8802	66	7.0800	86	2.3423		
47	10.7289	67	6.8330	87	2.2063		

Value of an Annuity on Two joint Lives. (Northampton 3 per Ce

Younger Age Twenty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
29	12.7540	49	10.3663	69	6.3133	89	1.
30	12.6710	50	10.2031	70	6.0556	90	1.
31	12.5847	51	10.0418	71	5.7956	91	1.
32	12.4950	52	9.8794	72	5.5348	92	1.
33	12.4016	53	9.7122	73	5.2752	93	.
34	12.3044	54	9.5401	74	5.0195	94	.
35	12.2033	55	9.3631	75	4.7717	95	.
36	12.0980	56	9.1812	76	4.5375	96	.
37	11.9883	57	8.9942	77	4.3020		
38	11.8740	58	8.8023	78	4.0588		
39	11.7549	59	8.6055	79	3.7984		
40	11.6308	60	8.4037	80	3.5350		
41	11.5049	61	8.1971	81	3.2817		
42	11.3774	62	7.9859	82	3.0375		
43	11.2485	63	7.7653	83	2.8126		
44	11.1147	64	7.5398	84	2.6417		
45	10.9760	65	7.3044	85	2.4841		
46	10.8319	66	7.0637	86	2.3403		
47	10.6825	67	6.8180	87	2.2045		
48	10.5274	68	6.5676	88	2.0902		

Younger Age Thirty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
30	12.5898	50	10.1602	70	6.0433	90	1.
31	12.5053	51	10.0008	71	5.7845	91	1.
32	12.4174	52	9.8402	72	5.5247	92	1.
33	12.3259	53	9.6747	73	5.2660	93	.
34	12.2306	54	9.5044	74	5.0112	94	.
35	12.1314	55	9.3291	75	4.7642	95	.
36	12.0280	56	9.1489	76	4.5307	96	.
37	11.9203	57	8.9636	77	4.2958		
38	11.8080	58	8.7734	78	4.0533		
39	11.6909	59	8.5781	79	3.7935		
40	11.5687	60	8.3780	80	3.5307		
41	11.4448	61	8.1729	81	3.2780		
42	11.3192	62	7.9632	82	3.0342		
43	11.1923	63	7.7441	83	2.8097		
44	11.0605	64	7.5200	84	2.6391		
45	10.9236	65	7.2860	85	2.4817		
46	10.7815	66	7.0466	86	2.3382		
47	10.6340	67	6.8022	87	2.2027		
48	10.4808	68	6.5531	88	2.0886		
49	10.3216	69	6.2999	89	1.9314		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Thirty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
31	12.4227	51	9.9578	71	5.7727	91	1.4516
32	12.3367	52	9.7991	72	5.5140	92	1.1562
33	12.2471	53	9.6355	73	5.2563	93	.8183
34	12.1538	54	9.4670	74	5.0024	94	.5251
35	12.0565	55	9.2935	75	4.7563	95	.2385
35	11.9551	56	9.1150	76	4.5236	96	.0000
37	11.8494	57	8.9315	77	4.2894		
38	11.7391	58	8.7430	78	4.0476		
39	11.6240	59	8.5494	79	3.7884		
40	11.5039	60	8.3509	80	3.5263		
41	11.3820	61	8.1475	81	3.2740		
42	11.2585	62	7.9394	82	3.0307		
43	11.1335	63	7.7218	83	2.8067		
44	11.0037	64	7.4992	84	2.6364		
45	10.8688	65	7.2667	85	2.4793		
46	10.7288	66	7.0287	86	2.3360		
47	10.5832	67	6.7856	87	2.2008		
48	10.4320	68	6.5379	88	2.0869		
49	10.2748	69	6.2859	89	1.9300		
50	10.1154	70	6.0305	90	1.7280		

Younger Age Thirty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
32	12.2526	52	9.7559	72	5.5028	92	1.1556
33	12.1650	53	9.5942	73	5.2462	93	.8179
34	12.0736	54	9.4276	74	4.9932	94	.5249
35	11.9784	55	9.2561	75	4.7480	95	.2384
36	11.8790	56	9.0795	76	4.5161	96	.0000
37	11.7753	57	8.8978	77	4.2827		
38	11.6671	58	8.7111	78	4.0416		
39	11.5541	59	8.5193	79	3.7831		
40	11.4361	60	8.3225	80	3.5216		
41	11.3164	61	8.1207	81	3.2699		
42	11.1949	62	7.9143	82	3.0271		
43	11.0720	63	7.6983	83	2.8035		
44	10.9443	64	7.4773	84	2.6336		
45	10.8115	65	7.2463	85	2.4768		
46	10.6735	66	7.0098	86	2.3338		
47	10.5300	67	6.7682	87	2.1988		
48	10.3809	68	6.5218	88	2.0852		
49	10.2258	69	6.2711	89	1.9286		
50	10.0683	70	6.0170	90	1.7268		
51	9.9127	71	5.7604	91	1.4507		

Value of an Annuity on Two joint Lives. (Northampton 3 per

Younger Age Thirty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
33	12.0793	53	9.5509	73	5.2354	93
34	11.9900	54	9.3863	74	4.9835	94
35	11.8968	55	9.2167	75	4.7392	95
36	11.7996	56	9.0420	76	4.5082	96
37	11.6980	57	8.8623	77	4.2756	
38	11.5919	58	8.6774	78	4.0353	
39	11.4811	59	8.4875	79	3.7776	
40	11.3653	60	8.2925	80	3.5167	
41	11.2477	61	8.0925	81	3.2656	
42	11.1284	62	7.8878	82	3.0233	
43	11.0076	63	7.6735	83	2.8002	
44	10.8821	64	7.4542	84	2.6307	
45	10.7514	65	7.2248	85	2.4742	
46	10.6156	66	6.9899	86	2.3315	
47	10.4742	67	6.7498	87	2.1967	
48	10.3272	68	6.5048	88	2.0834	
49	10.1742	69	6.2555	89	1.9270	
50	10.0189	70	6.0027	90	1.7256	
51	9.8654	71	5.7474	91	1.4498	
52	9.7106	72	5.4910	92	1.1549	

Younger Age Thirty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
34	11.9028	54	9.3427	74	4.9732	94
35	11.8117	55	9.1752	75	4.7299	95
36	11.7165	56	9.0025	76	4.4998	96
37	11.6172	57	8.8248	77	4.2681	
38	11.5133	58	8.6419	78	4.0286	
39	11.4047	59	8.4539	79	3.7716	
40	11.2911	60	8.2608	80	3.5115	
41	11.1757	61	8.0627	81	3.2611	
42	11.0587	62	7.8598	82	3.0193	
43	10.9402	63	7.6473	83	2.7967	
44	10.8168	64	7.4297	84	2.6275	
45	10.6854	65	7.2020	85	2.4714	
46	10.5548	66	6.9688	86	2.3290	
47	10.4157	67	6.7302	87	2.1946	
48	10.2709	68	6.4868	88	2.0815	
49	10.1201	69	6.2390	89	1.9254	
50	9.9670	70	5.9876	90	1.7243	
51	9.8156	71	5.7335	91	1.4488	
52	9.6629	72	5.4784	92	1.1543	
53	9.5053	73	5.2240	93	.8171	

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
35	11.7227	55	9.1314	75	4.7199	95	.2382
36	11.6298	56	8.9608	76	4.4909	96	.0000
37	11.5326	57	8.7852	77	4.2601		
38	11.4310	58	8.6043	78	4.0214		
39	11.3247	59	8.4183	79	3.7653		
40	11.2134	60	8.2272	80	3.5059		
41	11.1004	61	8.0311	81	3.2562		
42	10.9856	62	7.8301	82	3.0151		
43	10.8694	63	7.6195	83	2.7929		
44	10.7483	64	7.4037	84	2.6242		
45	10.6223	65	7.1778	85	2.4684		
46	10.4909	66	6.9463	86	2.3264		
47	10.3541	67	6.7095	87	2.1923		
48	10.2116	68	6.4677	88	2.0795		
49	10.0632	69	6.2214	89	1.9238		
50	9.9123	70	5.9714	90	1.7230		
51	9.7631	71	5.7188	91	1.4478		
52	9.6126	72	5.4650	92	1.1536		
53	9.4572	73	5.2118	93	.8167		
54	9.2968	74	4.9622	94	.5242		

Younger Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
36	11.5391	56	8.9168	76	4.4812	96	.0000
37	11.4442	57	8.7433	77	4.2515		
38	11.3449	58	8.5646	78	4.0138		
39	11.2409	59	8.3807	79	3.7585		
40	11.1320	60	8.1917	80	3.5000		
41	11.0213	61	7.9976	81	3.2509		
42	10.9089	62	7.7986	82	3.0105		
43	10.7951	63	7.5900	83	2.7859		
44	10.6764	64	7.3761	84	2.6206		
45	10.5527	65	7.1521	85	2.4652		
46	10.4238	66	6.9224	86	2.3236		
47	10.2894	67	6.6874	87	2.1893		
48	10.1493	68	6.4472	88	2.0774		
49	10.0032	69	6.2026	89	1.9220		
50	9.8547	70	5.9542	90	1.7216		
51	9.7078	71	5.7031	91	1.4468		
52	9.5596	72	5.4506	92	1.1529		
53	9.4065	73	5.1988	93	.8163		
54	9.2483	74	4.9504	94	.5240		
55	9.0851	75	4.7093	95	.2381		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
37	11.3516	49	9.9400	61	7.9619	73	5.1848	85	2.4
38	11.2546	50	9.7939	62	7.7650	74	4.9376	86	2.3
39	11.1531	51	9.6495	63	7.5585	75	4.6977	87	2.1
40	11.0466	52	9.5036	64	7.3466	76	4.4708	88	2.0
41	10.9383	53	9.3528	65	7.1246	77	4.2421	89	1.9
42	10.8284	54	9.1970	66	6.8969	78	4.0054	90	1.7
43	10.7170	55	9.0361	67	6.6637	79	3.7512	91	1.4
44	10.6008	56	8.8701	68	6.4254	80	3.4935	92	1.1
45	10.4796	57	8.6988	69	6.1825	81	3.2453	93	.8
46	10.3531	58	8.5224	70	5.9357	82	3.0055	94	.5
47	10.2212	59	8.3407	71	5.6862	83	2.7845	95	.2
48	10.0836	60	8.1539	72	5.4352	84	2.6167	96	.0

Younger Age Thirty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
38	11.1601	50	9.7298	62	7.7293	74	4.9239	86	2.3
39	11.0610	51	9.5878	63	7.5249	75	4.6852	87	2.1
40	10.9570	52	9.4444	64	7.3152	76	4.4595	88	2.0
41	10.8512	53	9.2961	65	7.0953	77	4.2319	89	1.9
42	10.7438	54	9.1427	66	6.8696	78	3.9963	90	1.7
43	10.6348	55	8.9842	67	6.6383	79	3.7431	91	1.4
44	10.5212	56	8.8206	68	6.4019	80	3.4864	92	1.1
45	10.4026	57	8.6517	69	6.1608	81	3.2390	93	.8
46	10.2787	58	8.4776	70	5.9158	82	3.0000	94	.5
47	10.1494	59	8.2983	71	5.6679	83	2.7796	95	.2
48	10.0143	60	8.1137	72	5.4185	84	2.6123	96	.0
49	9.8733	61	7.9240	73	5.1696	85	2.4579		

Younger Age Thirty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
39	10.9644	51	9.5226	63	7.4890	75	4.6716	87	2.1
40	10.8629	52	9.3818	64	7.2815	76	4.4471	88	2.0
41	10.7597	53	9.2360	65	7.0638	77	4.2207	89	1.9
42	10.6549	54	9.0851	66	6.8402	78	3.9862	90	1.7
43	10.5485	55	8.9292	67	6.6110	79	3.7341	91	1.4
44	10.4375	56	8.7680	68	6.3766	80	3.4784	92	1.1
45	10.3214	57	8.6016	69	6.1374	81	3.2320	93	.8
46	10.2002	58	8.4300	70	5.8943	82	2.9938	94	.5
47	10.0735	59	8.2530	71	5.6482	83	2.7742	95	.2
48	9.9412	60	8.0709	72	5.4005	84	2.6074	96	.0
49	9.8028	61	7.8835	73	5.1531	85	2.4535		
50	9.6620	62	7.6911	74	4.9088	86	2.3131		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Forty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
40	10.7641	52	9.3154	64	7.2453	76	4.4335	88	2.0656
41	10.6635	53	9.1722	65	7.0299	77	4.2083	89	1.9121
42	10.5613	54	9.0240	66	6.8086	78	3.9751	90	1.7137
43	10.4576	55	8.8707	67	6.5816	79	3.7242	91	1.4411
44	10.3492	56	8.7121	68	6.3492	80	3.4696	92	1.1490
45	10.2359	57	8.5483	69	6.1121	81	3.2241	93	.8140
46	10.1174	58	8.3792	70	5.8709	82	2.9869	94	.5228
47	9.9935	59	8.2048	71	5.6267	83	2.7680	95	.2376
48	9.8639	60	8.0251	72	5.3808	84	2.6019	96	.0000
49	9.7283	61	7.8402	73	5.1351	85	2.4485		
50	9.5902	62	7.6502	74	4.8924	86	2.3085		
51	9.4535	63	7.4505	75	4.6566	87	2.1765		

Younger Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
41	10.5656	53	9.1073	65	6.9957	77	4.1960	89	1.9090
42	10.4661	54	8.9619	66	6.7766	78	3.9640	90	1.7112
43	10.3650	55	8.8112	67	6.5518	79	3.7143	91	1.4391
44	10.2594	56	8.6553	68	6.3217	80	3.4608	92	1.1477
45	10.1488	57	8.4942	69	6.0866	81	3.2164	93	.8131
46	10.0331	58	8.3277	70	5.8475	82	2.9800	94	.5223
47	9.9120	59	8.1558	71	5.6051	83	2.7619	95	.2375
48	9 7852	60	7.9787	72	5.3610	84	2.5964	96	.0000
49	9.6524	61	7.7963	73	5.1170	85	2.4435		
50	9.5171	62	7.6087	74	4.8759	86	2.3041		
51	9.3832	63	7.4115	75	4.6417	87	2.1725		
52	9.2478	64	7.2087	76	4.4199	88	2.0620		

Younger Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
42	10.3692	54	8.8988	66	6.7445	78	3.9532	90	1.7088
43	10.2709	55	8.7509	67	6.5220	79	3.7046	91	1.4373
44	10.1680	56	8.5977	68	6.2940	80	3.4522	92	1.1464
45	10.0602	57	8.4393	69	6.0611	81	3.2088	93	.8123
46	9.9473	58	8.2755	70	5.8240	82	2.9733	94	.5219
47	9.8290	59	8.1063	71	5.5836	83	2.7560	95	.2373
48	9.7051	60	7.9318	72	5.3413	84	2.5911	96	.0000
49	9.5753	61	7.7519	73	5.0991	85	2.4388		
50	9.4428	62	7.5669	74	4.8596	86	2.2999		
51	9.3118	63	7.3722	75	4.6269	87	2.1687		
52	9.1791	64	7.1718	76	4.4065	88	2.0587		
53	9.0415	65	6.9612	77	4.1839	89	1.9061		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Forty-Three Years.

Age.	Value.	Age	Value.	Age.	Value.	Age.	Value.	Age.	V
43	10.1753	55	8.6898	67	6.4922	79	3.6954	91	1
44	10.0752	56	8.5395	68	6.2665	80	3.4442	92	1
45	9.9703	57	8.3838	69	6.0358	81	3.2017	93	
46	9.8602	58	8.2227	70	5.8007	82	2.9671	94	
47	9.7449	59	8.0563	71	5.5623	83	2.7505	95	
48	9.6239	60	7.8844	72	5.3219	84	2.5862	96	
49	9.4970	61	7.7072	73	5.0814	85	2.4345		
50	9.3675	62	7.5248	74	4.8437	86	2.2960		
51	9.2393	63	7.3327	75	4.6124	87	2.1653		
52	9.1095	64	7.1348	76	4.3935	88	2.0558		
53	8.9747	65	6.9267	77	4.1723	89	1.9037		
54	8.8349	66	6.7124	78	3.9428	90	1.7069		

Younger Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
44	9.9779	56	8.4779	68	6.2371	80	3.4355	92	1
45	9.8759	57	8.3251	69	6.0087	81	3.1941	93	
46	9.7688	58	8.1669	70	5.7758	82	2.9604	94	
47	9.6564	59	8.0033	71	5.5395	83	2.7446	95	
48	9.5385	60	7.8343	72	5.3011	84	2.5810	96	
49	9.4146	61	7.6599	73	5.0625	85	2.4298		
50	9.2881	62	7.4801	74	4.8265	86	2.2919		
51	9.1629	63	7.2907	75	4.5969	87	2.1618		
52	9.0361	64	7.0955	76	4.3795	88	2.0526		
53	8.9043	65	6.8899	77	4.1597	89	1.9011		
54	8.7674	66	6.6781	78	3.9316	90	1.7048		
55	8.6253	67	6.4604	79	3.6855	91	1.4343		

Younger Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
45	9.7768	57	8.2630	69	5.9796	81	3.1858	93	
46	9.6728	58	8.1078	70	5.7491	82	2.9531	94	
47	9.5634	59	7.9471	71	5.5150	83	2.7382	95	
48	9.4486	60	7.7810	72	5.2787	84	2.5753	96	
49	9.3278	61	7.6095	73	5.0421	85	2.4248		
50	9.2045	62	7.4326	74	4.8080	86	2.2875		
51	9.0824	63	7.2460	75	4.5802	87	2.1578		
52	8.9586	64	7.0536	76	4.3643	88	2.0493		
53	8.8299	65	6.8507	77	4.1461	89	1.8983		
54	8.6961	66	6.6416	78	3.9194	90	1.7026		
55	8.5570	67	6.4265	79	3.6748	91	1.4327		
56	8.4127	68	6.2057	80	3.4260	92	1.1432		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Forty-Six Years.

Age	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	9.5718	56	8.3436	66	6.6025	76	4.3479	86	2.2825
47	9.4656	57	8.1970	67	6.3901	77	4.1313	87	2.1535
48	9.3539	58	8.0442	68	6.1719	78	3.9062	88	2.0455
49	9.2364	59	7.8875	69	5.9484	79	3.6631	89	1.8952
50	9.1163	60	7.7244	70	5.7203	80	3.4157	90	1.7002
51	8.9973	61	7.5559	71	5.4886	81	3.1767	91	1.4310
52	8.8763	62	7.3820	72	5.2545	82	2.9451	92	1.1420
53	8.7512	63	7.1983	73	5.0201	83	2.7312	93	.8097
54	8.6206	64	7.0088	74	4.7879	84	2.5690	94	.5205
55	8.4848	65	6.8088	75	4.5620	85	2.4192	95	.2387
								96	.0000

Younger Age Forty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
47	9.3626	57	8.1270	67	6.3511	77	4.1150	87	2.1486
48	9.2542	58	7.9783	68	6.1357	78	3.8916	88	2.0412
49	9.1400	59	7.8240	69	5.9149	79	3.6501	89	1.8916
50	9.0232	60	7.6641	70	5.6893	80	3.4042	90	1.6974
51	8.9075	61	7.4988	71	5.4601	81	3.1666	91	1.4290
52	8.7902	62	7.3280	72	5.2284	82	2.9362	92	1.1407
53	8.6680	63	7.1475	73	4.9962	83	2.7234	93	.8090
54	8.5407	64	6.9610	74	4.7661	84	2.5520	94	.5201
55	8.4081	65	6.7640	75	4.5421	85	2.4129	95	.2366
56	8.2703	66	6.5606	76	4.3299	86	2.2769	96	.0000

Younger Age Forty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
48	9.1491	58	7.9072	68	6.0966	78	3.8754	88	2.0362
49	9.0383	59	7.7563	69	5.8786	79	3.6357	89	1.8874
50	8.9249	60	7.5999	70	5.6558	80	3.3915	90	1.6940
51	8.8126	61	7.4379	71	5.4291	81	3.1553	91	1.4266
52	8.6987	62	7.2704	72	5.2000	82	2.9262	92	1.1391
53	8.5798	63	7.0930	73	4.9701	83	2.7145	93	.8080
54	8.4559	64	6.9097	74	4.7423	84	2.5540	94	.5196
55	8.3268	65	6.7159	75	4.5204	85	2.4058	95	.2364
56	8.1924	66	6.5156	76	4.3101	86	2.2705	96	.0000
57	8.0526	67	6.3091	77	4.0971	87	2.1429		

Value of an Annuity on Two Joint Lives. (Northampton 3 per Cent.)

Younger Age Forty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.
49	8.9309	59	7.6842	69	5.8394	79	3.6195	89
50	8.8210	60	7.5313	70	5.6194	80	3.3770	90
51	8.7122	61	7.3727	71	5.3955	81	3.1425	91
52	8.6017	62	7.2086	72	5.1690	82	2.9148	92
53	8.4864	63	7.0347	73	4.9417	83	2.7043	93
54	8.3660	64	6.8548	74	4.7162	84	2.5449	94
55	8.2405	65	6.6642	75	4.4965	85	2.3975	95
56	8.1096	66	6.4672	76	4.2882	86	2.2630	96
57	7.9734	67	6.2638	77	4.0772	87	2.1362	
58	7.8316	68	6.0544	78	3.8574	88	2.0302	

Younger Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.
50	8.7146	60	7.4609	70	5.5822	80	3.3622	90
51	8.6093	61	7.3059	71	5.3611	81	3.1292	91
52	8.5024	62	7.1454	72	5.1373	82	2.9030	92
53	8.3906	63	6.9749	73	4.9125	83	2.6938	93
54	8.2738	64	6.7984	74	4.6895	84	2.5353	94
55	8.1519	65	6.6113	75	4.4720	85	2.3888	95
56	8.0247	66	6.4176	76	4.2658	86	2.2552	96
57	7.8921	67	6.2174	77	4.0568	87	2.1291	
58	7.7539	68	6.0112	78	3.8389	88	2.0239	
59	7.6102	69	5.7992	79	3.6029	89	1.8768	

Younger Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.
51	8.5075	61	7.2405	71	5.3284	81	3.1172	91
52	8.4041	62	7.0835	72	5.1072	82	2.8924	92
53	8.2959	63	6.9166	73	4.8850	83	2.6843	93
54	8.1828	64	6.7436	74	4.6643	84	2.5268	94
55	8.0645	65	6.5599	75	4.4491	85	2.3811	95
56	7.9410	66	6.3696	76	4.2449	86	2.2483	96
57	7.8120	67	6.1727	77	4.0378	87	2.1229	
58	7.6776	68	5.9696	78	3.8219	88	2.0184	
59	7.5375	69	5.7607	79	3.5877	89	1.8721	
60	7.3918	70	5.5466	80	3.3486	90	1.6815	

Value of an Annuity on Two Joint Lives. (Northampton 3 per Cent.)

Younger Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	8.3043	63	6.8577	74	4.6395	85	2.3739
53	8.1997	64	6.6883	75	4.4265	86	2.2418
54	8.0903	65	6.5082	76	4.2244	87	2.1172
55	7.9757	66	6.3213	77	4.0193	88	2.0133
56	7.8559	67	6.1278	78	3.8052	89	1.8678
57	7.7307	68	5.9279	79	3.5729	90	1.6780
58	7.6001	69	5.7222	80	3.3355	91	1.4145
59	7.4638	70	5.5111	81	3.1056	92	1.1306
60	7.3218	71	5.2957	82	2.8821	93	.8028
61	7.1742	72	5.0773	83	2.6753	94	.5167
62	7.0209	73	4.8577	84	2.5186	95	.2353
							.0000

Younger Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age	Value.
53	8.0989	64	6.6299	75	4.4026	86	2.2349
54	7.9932	65	6.4535	76	4.2027	87	2.1110
55	7.8825	66	6.2703	77	3.9997	88	2.0079
56	7.7665	67	6.0803	78	3.7876	89	1.8632
57	7.6452	68	5.8839	79	3.5572	90	1.6743
58	7.5185	69	5.6814	80	3.3216	91	1.4118
59	7.3861	70	5.4736	81	3.0933	92	1.1287
60	7.2481	71	5.2612	82	2.8713	93	.8016
61	7.1043	72	5.0457	83	2.6657	94	.5161
62	6.9549	73	4.8288	84	2.5100	95	.2351
63	6.7955	74	4.6131	85	2.3661	96	.0000

Younger Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
54	7.8913	65	6.3957	76	4.1797	87	2.1045
55	7.7845	66	6.2163	77	3.9789	88	2.0021
56	7.6726	67	6.0301	78	3.7689	89	1.8583
57	7.5553	68	5.8373	79	3.5406	90	1.6704
58	7.4326	69	5.6383	80	3.3069	91	1.4089
59	7.3043	70	5.4338	81	3.0803	92	1.1267
60	7.1703	71	5.2247	82	2.8598	93	.8004
61	7.0306	72	5.0122	83	2.6555	94	.5155
62	6.8852	73	4.7982	84	2.5009	95	.2349
63	6.7298	74	4.5853	85	2.3579	96	.0000
64	6.5682	75	4.3772	86	2.2276		

Value of an Annuity on Two Joint Lives. (Northampton 3 per

Younger Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
55	7.6817	66	6.1592	77	3.9568	88	1.
56	7.5738	67	5.9769	78	3.7491	89	1.
57	7.4607	68	5.7879	79	3.5229	90	1.
58	7.3421	69	5.5927	80	3.2913	91	1.
59	7.2180	70	5.3917	81	3.0664	92	1.
60	7.0882	71	5.1860	82	2.8476	93	.
61	6.9528	72	4.9768	83	2.6446	94	.
62	6.8116	73	4.7658	84	2.4912	95	.
63	6.6604	74	4.5557	85	2.3492	96	.
64	6.5029	75	4.3504	86	2.2197		
65	6.3345	76	4.1553	87	2.0976		

Younger Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
56	7.4701	67	5.9206	78	3.7281	89	1.
57	7.3612	68	5.7356	79	3.5042	90	1.
58	7.2469	69	5.5443	80	3.2747	91	1.
59	7.1271	70	5.3471	81	3.0518	92	1.
60	7.0017	71	5.1450	82	2.8346	93	.
61	6.8706	72	4.9392	83	2.6332	94	.
62	6.7338	73	4.7315	84	2.4808	95	.
63	6.5870	74	4.5244	85	2.3399	96	.
64	6.4338	75	4.3219	86	2.2114		
65	6.2698	76	4.1294	87	2.0902		
66	6.0987	77	3.9334	88	1.9895		

Younger Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
57	7.2566	68	5.6802	79	3.4843	90	1.
58	7.1467	69	5.4930	80	3.2571	91	1.
59	7.0314	70	5.2998	81	3.0361	92	1.
60	6.9105	71	5.1015	82	2.8208	93	.
61	6.7839	72	4.8993	83	2.6210	94	.
62	6.6515	73	4.6950	84	2.4699	95	.
63	6.5093	74	4.4912	85	2.3301	96	.
64	6.3607	75	4.2917	86	2.2026		
65	6.2012	76	4.1019	87	2.0823		
66	6.0346	77	3.9086	88	1.9825		
67	5.8608	78	3.7058	89	1.8417		

Value of an Annuity on Two Joint Lives. (Northampton 3 per Cent.)

Younger Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.0413	68	5.6213	78	3.6821	88	1.9751
59	6.9306	69	5.4385	79	3.4632	89	1.8354
60	6.8143	70	5.2495	80	3.2384	90	1.6520
61	6.6923	71	5.0552	81	3.0197	91	1.3951
62	6.5647	72	4.8569	82	2.8062	92	1.1173
63	6.4273	73	4.6563	83	2.6080	93	.7947
64	6.2833	74	4.4559	84	2.4583	94	.5124
65	6.1286	75	4.2596	85	2.3197	95	.2337
66	5.9666	76	4.0728	86	2.1933	96	.0000
67	5.7975	77	3.8822	87	2.0740		

Younger Age Fifty-Nine Years.

Age	Value.	Age.	Value.	Age.	Value.	Age.	Value.
59	6.8245	69	5.3806	79	3.4409	89	1.8288
60	6.7129	70	5.1961	80	3.2186	90	1.6466
61	6.5958	71	5.0061	81	3.0022	91	1.3911
62	6.4730	72	4.8119	82	2.7908	92	1.1145
63	6.3405	73	4.6151	83	2.5943	93	.7930
64	6.2015	74	4.4184	84	2.4460	94	.5114
65	6.0517	75	4.2255	85	2.3087	95	.2333
66	5.8946	76	4.0418	86	2.1834	96	.0000
67	5.7303	77	3.8543	87	2.0652		
68	5.5588	78	3.6570	88	1.9673		

Younger Age Sixty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
60	6.6062	70	5.1393	80	3.1977	90	1.6409
61	6.4940	71	4.9539	81	2.9837	91	1.3869
62	6.3763	72	4.7641	82	2.7744	92	1.1115
63	6.2488	73	4.5714	83	2.5799	93	.7912
64	6.1149	74	4.3786	84	2.4330	94	.5104
65	5.9702	75	4.1893	85	2.2970	95	.2330
66	5.8182	76	4.0090	86	2.1730	96	.0000
67	5.6590	77	3.8246	87	2.0559		
68	5.4925	78	3.6304	88	1.9592		
69	5.3191	79	3.4172	89	1.8218		

Value of an Annuity on Two Joint Lives. (Northampton 3 per (

Younger Age Sixty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
61	6.3869	71	4.8985	81	2.9642	91	1.3
62	6.2742	72	4.7132	82	2.7573	92	1.1
63	6.1520	73	4.5250	83	2.5647	93	.7
64	6.0234	74	4.3363	84	2.4195	94	.5
65	5.8840	75	4.1509	85	2.2849	95	.2
66	5.7374	76	3.9742	86	2.1622	96	.0
67	5.5834	77	3.7932	87	2.0463		
68	5.4221	78	3.6022	88	1.9507		
69	5.2538	79	3.3922	89	1.8147		
70	5.0790	80	3.1756	90	1.6352		

Younger Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
62	6.1668	72	4.6592	82	2.7393	92	1.1
63	6.0500	73	4.4757	83	2.5489	93	.7
64	5.9267	74	4.2914	84	2.4053	94	.5
65	5.7930	75	4.1101	85	2.2723	95	.2
66	5.6518	76	3.9372	86	2.1510	96	.0
67	5.5033	77	3.7599	87	2.0365		
68	5.3475	78	3.5724	88	1.9421		
69	5.1846	79	3.3658	89	1.8075		
70	5.0150	80	3.1523	90	1.6295		
71	4.8395	81	2.9437	91	1.3784		

Younger Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
63	5.9389	73	4.4202	83	2.5305	93	.78
64	5.8211	74	4.2408	84	2.3889	94	.50
65	5.6931	75	4.0641	85	2.2577	95	.23
66	5.5577	76	3.8954	86	2.1379	96	.00
67	5.4150	77	3.7220	87	2.0249		
68	5.2650	78	3.5385	88	1.9320		
69	5.1077	79	3.3356	89	1.7989		
70	4.9438	80	3.1255	90	1.6226		
71	4.7737	81	2.9201	91	1.3733		
72	4.5987	82	2.7185	92	1.1022		

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Sixty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
64	5.7093	72	4.5339	80	3.0968	88	1.9212
65	5.5872	73	4.3608	81	2.8948	89	1.7900
66	5.4579	74	4.1865	82	2.6962	90	1.6155
67	5.3212	75	4.0146	83	2.5109	91	1.3681
68	5.1771	76	3.8504	84	2.3714	92	1.0987
69	5.0258	77	3.6814	85	2.2420	93	.7834
70	4.8677	78	3.5020	86	2.1240	94	.5063
71	4.7034	79	3.3031	87	2.0127	95	.2314
						96	.0000

Younger Age Sixty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
65	5.4713	73	4.2939	81	2.8653	89	1.7790
66	5.3481	74	4.1251	82	2.6702	90	1.6067
67	5.2177	75	3.9585	83	2.4878	91	1.3616
68	5.0799	76	3.7992	84	2.3507	92	1.0942
69	4.9349	77	3.6349	85	2.2235	93	.7807
70	4.7829	78	3.4601	86	2.1075	94	.5048
71	4.6247	79	3.2657	87	1.9980	95	.2308
72	4.4612	80	3.0636	88	1.9083	96	.0000

Younger Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
66	5.2314	74	4.0586	82	2.6416	90	1.5970
67	5.1073	75	3.8975	83	2.4625	91	1.3544
68	4.9760	76	3.7435	84	2.3279	92	1.0892
69	4.8375	77	3.5843	85	2.2031	93	.7777
70	4.6920	78	3.4144	86	2.0892	94	.5032
71	4.5401	79	3.2248	87	1.9818	95	.2302
72	4.3828	80	3.0272	88	1.8940	96	.0000
73	4.2216	81	2.8331	89	1.7669		

Younger Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
67	4.9899	75	3.8314	83	2.4345	91	1.3465
68	4.8652	76	3.6829	84	2.3027	92	1.0838
69	4.7334	77	3.5291	85	2.1805	93	.7743
70	4.5945	78	3.3645	86	2.0690	94	.5014
71	4.4492	79	3.1801	87	1.9638	95	.2295
72	4.2984	80	2.9874	88	1.8782	96	.0000
73	4.1435	81	2.7977	89	1.7536		
74	3.9867	82	2.6102	90	1.5863		

TABLE VIII.

Value of an Annuity on Two joint Lives. (Northampton 3 per C

Younger Age Sixty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
68	4.7473	76	3.6171	84	2.2749	92	1
69	4.6223	77	3.4690	85	2.1554	93	
70	4.4903	78	3.3100	86	2.0465	94	
71	4.3518	79	3.1312	87	1.9438	95	
72	4.2077	80	2.9438	88	1.8605	96	
73	4.0594	81	2.7588	89	1.7386		
74	3.9089	82	2.5756	90	1.5743		
75	3.7598	83	2.4037	91	1.3376		

Younger Age Sixty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
69	4.5042	76	3.5458	83	2.3698	90	1
70	4.3793	77	3.4037	84	2.2442	91	1
71	4.2478	78	3.2506	85	2.1276	92	1
72	4.1106	79	3.0778	86	2.0214	93	
73	3.9691	80	2.8960	87	1.9214	94	
74	3.8252	81	2.7162	88	1.8408	95	
75	3.6824	82	2.5376	89	1.7218	96	

Younger Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
70	4.2614	77	3.3330	84	2.2103	91
71	4.1371	78	3.1862	85	2.0969	92
72	4.0071	79	3.0196	86	1.9936	93
73	3.8725	80	2.8438	87	1.8964	94
74	3.7355	81	2.6695	88	1.8186	95
75	3.5993	82	2.4960	89	1.7030	96
76	3.4689	83	2.3325	90	1.5458	

Younger Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
71	4.0201	78	3.1166	85	2.0631	92
72	3.8972	79	2.9566	86	1.9628	93
73	3.7698	80	2.7871	87	1.8686	94
74	3.6398	81	2.6186	88	1.7937	95
75	3.5104	82	2.4505	89	1.6817	96
76	3.3865	83	2.2916	90	1.5284	
77	3.2570	84	2.1732	91	1.3032	

TABLE VIII.

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Seventy-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
72	3.7817	79	2.8889	86	1.9292	93	.7502
73	3.6616	80	2.7261	87	1.8381	94	.4884
74	3.5387	81	2.5637	88	1.7661	95	.2246
75	3.4162	82	2.4011	89	1.6578	96	.0000
76	3.2989	83	2.2473	90	1.5089		
77	3.1760	84	2.1327	91	1.2889		
78	3.0422	85	2.0262	92	1.0440		

Younger Age Seventy-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
73	3.5488	79	2.8174	85	1.9865	91	1.2722
74	3.4331	80	2.6612	86	1.8929	92	1.0323
75	3.3176	81	2.5051	87	1.8051	93	.7431
76	3.2070	82	2.3484	88	1.7361	94	.4845
77	3.0907	83	2.1997	89	1.6316	95	.2231
78	2.9637	84	2.0893	90	1.4871	96	.0000

Younger Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
74	3.3246	80	2.5939	86	1.8549	92	1.0193
75	3.2161	81	2.4441	87	1.7704	93	.7349
76	3.1123	82	2.2933	88	1.7045	94	.4800
77	3.0028	83	2.1499	89	1.6038	95	.2214
78	2.8826	84	2.0437	90	1.4638	96	.0000
79	2.7432	85	1.9448	91	1.2541		

Younger Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
75	3.1146	81	2.3830	87	1.7357	93	.7262
76	3.0174	82	2.3381	88	1.6731	94	.4750
77	2.9147	83	2.0999	89	1.5763	95	.2194
78	2.8014	84	1.9979	90	1.4406	96	.0000
79	2.6690	85	1.9029	91	1.2360		
80	2.5265	86	1.8166	92	1.0059		

Value of an Annuity on Two joint Lives. (Northampton 3 per C

Younger Age Seventy-Six Years.				Younger Age Seventy-Seven				
Age.	Value,	Age.	Value.	Age.	Value.	Age.	
76	2.9269	87	1.7043	77	2.7417	87	1
77	2.8308	88	1.6452	78	2.6423	88	1
78	2.7243	89	1.5524	79	2.5242	89	1
79	2.5989	90	1.4211	80	2.3955	90	1
80	2.4631	91	1.2212	81	2.2649	91	1
81	2.3258	92	.9953	82	2.1317	92	
82	2.1866	93	.7195	83	2.0039	93	
83	2.0535	94	.4712	84	1.9102	94	
84	1.9555	95	.2179	85	1.8230	95	
85	1.8643	96	.0000	86	1.7441	96	
86	1.7816						

Younger Age Seventy-Eight Years.				Younger Age Seventy-Nine				
Age.	Value.	Age.	Value.	Age.	Value.	Age.	
78	2.5503	88	1.5803	79	2.3385	88	1
79	2.4401	89	1.4975	80	2.2261	89	1
80	2.3192	90	1.3774	81	2.1109	90	1
81	2.1959	91	1.1891	82	1.9919	91	1
82	2.0694	92	.9737	83	1.8768	92	
83	1.9475	93	.7066	84	1.7928	93	
84	1.8583	94	.4644	85	1.7147	94	
85	1.7754	95	.2153	86	1.6444	95	
86	1.7006	96	.0000	87	1.5796	96	
87	1.6313						

Younger Age Eighty Years.				Younger Age Eighty-One				
Age.	Value.	Age.	Value.	Age.	Value.	Age.	
80	2.1225	89	1.4071	81	1.9173	89	1
81	2.0157	90	1.3023	82	1.8143	90	1
82	1.9048	91	1.1320	83	1.7134	91	1
83	1.7968	92	.9335	84	1.6404	92	
84	1.7183	93	.6819	85	1.5721	93	
85	1.6451	94	.4508	86	1.5109	94	
86	1.5795	95	.2101	87	1.4549	95	
87	1.5192	96	.0000	88	1.4174	96	
88	1.4774						

Value of an Annuity on Two joint Lives. (Northampton 3 per Cent.)

Younger Age Eighty-Two Years.				Younger Age Eighty-Three Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
82	1.7191	90	1.2044	83	1.5380	90	1.1495
83	1.6253	91	1.0546	84	1.4753	91	1.0094
84	1.5576	92	.8772	85	1.4164	92	.8423
85	1.4942	93	.6463	86	1.3635	93	.6225
86	1.4373	94	.4312	87	1.3153	94	.4168
87	1.3854	95	.2027	88	1.2848	95	.1965
88	1.3517	96	.0000	89	1.2314	96	.0000
89	1.2933						

Younger Age Eighty-Four Years.				Younger Age Eighty-Five Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
84	1.4164	91	.9783	85	1.3090	91	.9482
85	1.3610	92	.8190	86	1.2622	92	.7959
86	1.3112	93	.6072	87	1.2196	93	.5919
87	1.2659	94	.4079	88	1.1936	94	.3989
88	1.2377	95	.1929	89	1.1470	95	.1892
89	1.1879	96	.0000	90	1.0748	96	.0000
90	1.1113						

Younger Age Eighty-Six Years.				Younger Age Eighty-Seven Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
86	1.2185	92	.7748	87	1.1416	92	.7560
87	1.1786	93	.5774	88	1.1207	93	.5637
88	1.1549	94	.3903	89	1.0803	94	.3812
89	1.1113	95	.1858	90	1.0153	95	.1815
90	1.0427	96	.0000	91	.8981	96	.0000
91	.9212						

Value of an Annuity on Two joint Lives. (Northampton 3 per Ce

Younger Age Eighty-Eight Years.

Age.	Value.	Age.	Value.
88	1.1030	93	.5620
89	1.0666	94	.3804
90	1.0057	95	.1813
91	.8921	96	.0000
92	.7526		

Younger Age Eighty-Nine

Age.	Value.	Age
89	1.0361	93
90	.9822	94
91	.8761	95
92	.7427	96

Younger Age Ninety Years.

Age.	Value.
90	.9386
91	.8449
92	.7231
93	.5465
94	.3736
95	.1794
96	.0000

Younger Age Ninety-One

Age.	Value.
91	.7697
92	.6680
93	.5115
94	.3539
95	.1713
96	.0000

Younger Age Ninety-Two Years.

Age.	Value.
92	.5910
93	.4620
94	.3269
95	.1618
96	.0000

Younger Age Ninety-Three

Age.	Value.
93	.3697
94	.2689
95	.1365
96	.0000

Younger Age Ninety-Four Years.

Age.	Value.
94	.2034
95	.1079
96	.0000

Younger Age Ninety-Five

Age.	Value.
95	.0607
96	.0000

alues of Annuities on Two joint Lives by the Northampton Table of Mortality.

Ages.				
der	Younger	4 per cent.	5 per cent.	6 per cent.
1	1	8.252	7.287	6.515
2	2	11.107	9.793	8.741
3	3	12.325	10.862	9.689
4	4	13.185	11.621	10.365
5	5	13.591	11.984	10.691
6	1	10.741	9.479	8.467
	6	14.005	12.358	11.031
7	2	12.581	11.100	9.911
	7	14.224	12.596	11.251
8	3	13.319	11.755	10.498
	8	14.399	12.731	11.382
9	4	13.775	12.165	10.869
	9	14.396	12.744	11.404
10	5	13.933	12.315	11.010
	10	14.277	12.665	11.345
11	1	10.782	9.544	8.547
	6	14.068	12.447	11.136
	11	14.133	12.546	11.249
12	2	12.438	11.010	9.857
	7	14.111	12.498	11.192
	12	13.966	12.411	11.139
13	3	13.019	11.528	10.324
	8	14.089	12.492	11.197
	13	13.789	12.268	11.023
14	4	13.374	11.850	10.617
	9	13.992	12.421	11.144
	14	13.604	12.118	10.899
15	5	13.479	11.954	10.716
	10	13.841	12.302	11.048
	15	13.411	11.960	10.767
16	1	10.406	9.243	8.301
	6	13.578	12.052	10.812
	11	13.664	12.158	10.929
	16	13.212	11.793	10.626
17	2	11.981	10.642	9.555
	7	13.599	12.083	10.849
	12	13.480	12.009	10.805
	17	13.019	11.630	10.489
18	3	12.531	11.134	9.998
	8	13.569	12.070	10.847

Ages.				
Older	Younger	4 per cent.	5 per cent.	6 per cent.
18	13	13.303	11.864	10.685
	18	12.841	11.483	10.365
19	4	12.876	11.447	10.284
	9	13.482	12.006	10.799
	14	13.130	11.723	10.568
	19	12.679	11.351	10.255
20	5	12.993	11.561	10.391
	10	13.355	11.906	10.719
	15	12.961	11.585	10.453
	20	12.535	11.232	10.156
21	1	10.053	8.961	8.070
	6	13.121	11.685	10.510
	11	13.217	11.797	10.631
	16	12.799	11.452	10.342
	21	12.409	11.131	10.074
22	2	11.605	10.344	9.313
	7	13.178	11.748	10.576
	12	13.078	11.686	10.541
	17	12.646	11.327	10.239
	22	12.293	11.042	10.002
23	3	12.161	10.843	9.764
	8	13.178	11.761	10.597
	13	12.934	11.570	10.446
	18	12.500	11.209	10.140
	23	12.179	10.951	9.928
24	4	12.511	11.163	10.057
	9	13.112	11.715	10.566
	14	12.784	11.450	10.348
	19	12.361	11.096	10.048
	24	12.062	10.858	9.853
25	5	12.633	11.281	10.170
	10	12.998	11.627	10.497
	15	12.630	11.324	10.244
	20	12.229	10.989	9.960
	25	11.944	10.764	9.776
26	1	9.770	8.742	7.897
	6	12.754	11.400	10.285
	11	12.861	11.519	10.410
	16	12.470	11.193	10.135
	21	12.105	10.890	9.879
	26	11.822	10.667	9.697
27	2	11.264	10.080	9.104
	7	12.798	11.452	10.341
	12	12.715	11.402	10.314
	17	12.311	11.063	10.027
	22	11.987	10.796	9.803
	27	11.699	10.567	9.616

TABLE VIII.

Values of Annuities on Two joint Lives by the Northampton Table of M

Ages.		4 per cent.	5 per cent.	6 per cent.
Older	Younger			
28	3	11.790	10.555	9.537
	8	12.786	11.455	10.354
	13	12.564	11.280	10.215
	18	12.158	10.939	9.924
	23	11.866	10.699	9.724
	28	11.573	10.466	9.533
29	4	12.116	10.855	9.813
	9	12.710	11.401	10.315
	14	12.408	11.153	10.110
	19	12.013	10.820	9.826
	24	11.743	10.600	9.643
	29	11.445	10.362	9.448
30	5	12.220	10.959	9.913
	10	12.586	11.304	10.239
	15	12.246	11.021	10.001
	20	11.873	10.707	9.732
	25	11.618	10.499	9.561
	30	11.313	10.255	9.360
31	1	9.438	8.483	7.691
	6	12.322	11.062	10.015
	11	12.441	11.188	10.144
	16	12.078	10.883	9.886
	21	11.742	10.600	9.644
	26	11.489	10.396	9.476
	31	11.179	10.146	9.270
32	2	10.865	9.767	8.855
	7	12.350	11.100	10.060
	12	12.286	11.062	10.042
	17	11.911	10.746	9.771
	22	11.615	10.498	9.561
	27	11.359	10.289	9.389
	32	11.042	10.034	9.178
33	3	11.355	10.213	9.263
	8	12.323	11.090	10.061
	13	12.125	10.932	9.934
	18	11.750	10.613	9.660
	23	11.485	10.393	9.474
	28	11.225	10.181	9.299
	33	10.902	9.919	9.082
34	4	11.651	10.488	9.518
	9	12.234	11.024	10.012
	14	11.959	10.796	9.822
	19	11.595	10.486	9.554
	24	11.352	10.285	9.386
	29	11.088	10.069	9.207
	34	10.759	9.801	8.984
35	5	11.732	10.572	9.602
	10	12.098	10.916	9.925
	15	11.787	10.655	9.703

Ages.		4 per cent.	5 per cen
Older	Younger		
35	20	11.445	10.363
	25	11.217	10.175
	30	10.948	9.954
	35	10.612	9.680
36	1	9.047	8.173
	6	11.812	10.656
	11	11.941	10.788
	16	11.609	10.507
	21	11.302	10.246
	26	11.078	10.062
	31	10.805	9.837
	36	10.462	9.555
37	2	10.392	9.390
	7	11.819	10.676
	12	11.773	10.651
	17	11.430	10.358
	22	11.163	10.132
	27	10.936	9.946
	32	10.659	9.716
	37	10.307	9.427
38	3	10.838	9.800
	8	11.772	10.648
	13	11.600	10.509
	18	11.257	10.214
	23	11.020	10.015
	28	10.791	9.826
	33	10.508	9.591
	38	10.149	9.294
39	4	11.097	10.043
	9	11.665	10.565
	14	11.420	10.360
	19	11.089	10.074
	24	10.874	9.895
	29	10.642	9.703
	34	10.354	9.463
	39	9.986	9.158
40	5	11.150	10.102
	10	11.513	10.442
	15	11.234	10.205
	20	10.924	9.937
	25	10.725	9.771
	30	10.490	9.576
	35	10.196	9.331
	40	9.820	9.016
41	1	8.585	7.800
	6	11.203	10.163
	11	11.342	10.302
	16	11.044	10.046
	21	10.768	9.809
	26	10.574	9.647

ues of Annuities on two joint Lives by the Northampton Table of Mortality.

s.				Ages.				
unger	4 per cent.	5 per cent.	6 per cent.	Older	Younger	4 per cent.	5 per cent.	6 per cent.
31	10.336	9.448	8.688	47	7	10.491	9.589	8.815
36	10.037	9.198	8.476		12	10.481	9.592	8.827
41	9.654	8.876	8.202		17	10.208	9.353	8.617
					22	10.001	9.173	8.458
2	9.839	8.942	8.182		27	9.836	9.032	8.338
7	11.190	10.165	9.296		32	9.631	8.858	8.189
12	11.165	10.156	9.298		37	9.370	8.636	7.998
17	10.856	9.889	9.065		42	9.037	8.350	7.751
22	10.619	9.685	8.889		47	8.637	8.008	7.455
27	10.423	9.522	8.751					
32	10.182	9.320	8.580	48	3	9.566	8.759	8.063
37	9.877	9.062	8.362		8	10.404	9.524	8.767
42	9.491	8.737	8.083		13	10.284	9.425	8.686
					18	10.011	9.186	8.473
3	10.242	9.315	8.528		23	9.833	9.031	8.338
8	11.130	10.124	9.270		28	9.667	8.890	8.217
13	10.985	10.007	9.173		33	9.461	8.714	8.066
18	10.677	9.739	8.938		38	9.195	8.487	7.870
23	10.470	9.562	8.785		43	8.862	8.200	7.621
28	10.272	9.396	8.645		48	8.453	7.849	7.316
33	10.027	9.190	8.471					
38	9.716	8.927	8.246	49	4	9.744	8.932	8.230
43	9.326	8.599	7.965		9	10.263	9.409	8.673
					14	10.080	9.252	8.538
4	10.468	9.531	8.733		19	9.818	9.021	8.332
9	11.012	10.031	9.197		24	9.661	8.886	8.214
14	10.799	9.852	9.042		29	9.495	8.744	8.092
19	10.502	9.592	8.814		34	9.286	8.565	7.938
24	10.317	9.435	8.670		39	9.015	8.333	7.737
29	10.117	9.267	8.536		44	8.683	8.046	7.488
34	9.869	9.058	8.358		49	8.266	7.686	7.173
39	9.550	8.787	8.127					
44	9.160	8.457	7.843	50	5	9.742	8.941	8.248
					10	10.085	9.260	8.548
5	10.500	9.571	8.778		15	9.872	9.076	8.386
10	10.851	9.900	9.088		20	9.630	8.861	8.195
15	10.607	9.690	8.905		25	9.488	8.739	8.089
20	10.330	9.448	8.692		30	9.321	8.596	7.966
25	10.160	9.304	8.569		35	9.110	8.415	7.809
30	9.959	9.135	8.424		40	8.834	8.177	7.602
35	9.706	8.921	8.242		45	8.503	7.891	7.353
40	9.381	8.643	8.003		50	8.081	7.522	7.030
45	8.990	8.312	7.718					
				51	1	7.479	6.885	6.370
1	8.071	7.379	6.787		6	9.745	8.956	8.271
6	10.528	9.609	8.823		11	9.894	9.100	8.411
11	10.697	9.774	8.962		16	9.665	8.899	8.234
16	10.408	9.522	8.762		21	9.454	8.712	8.067
21	10.165	9.310	8.574		26	9.318	8.595	7.966
26	10.000	9.170	8.455		31	9.151	8.451	7.841
31	9.797	8.998	8.309		36	8.937	8.267	7.681
36	9.540	8.781	8.122		41	8.658	8.025	7.470
41	9.210	8.497	7.878		46	8.326	7.737	7.219
46	8.815	8.162	7.589		51	7.900	7.366	6.893
2	9.221	8.435	7.760	52	2	8.520	7.848	7.264

Values of Annuities on Two joint Lives by the Northampton Table of M

Ages.		4 per cent.	5 per cent.	6 per cent.	Ages.		4 per cent.	5 per cen
Older	Younger				Older	Younger		
52	7	9.690	8.919	8.248	56	46	7.763	7.24
	12	9.698	8.934	8.270		51	7.409	6.93
	17	9.461	8.724	8.083		56	6.993	6.57
	22	9.284	8.568	7.944				
	27	9.148	8.451	7.842	57	2	7.756	7.19
	32	8.980	8.306	7.716		7	8.817	8.17
	37	8.763	8.119	7.553		12	8.839	8.20
	42	8.483	7.875	7.340		17	8.639	8.02
	47	8.147	7.582	7.084		22	8.491	7.89
	52	7.724	7.213	6.758		27	8.383	7.79
						32	8.250	7.69
53	3	8.815	8.128	7.529		37	8.076	7.52
	8	9.591	8.841	8.188		42	7.848	7.32
	13	9.497	8.763	8.123		47	7.574	7.08
	18	9.260	8.552	7.934		52	7.225	6.77
	23	9.111	8.421	7.818		57	6.805	6.40
	28	8.975	8.304	7.716				
	33	8.806	8.157	7.588	58	3	7.986	7.42
	38	8.586	7.966	7.421		8	8.691	8.07
	43	8.308	7.724	7.208		13	8.622	8.01
	48	7.965	7.424	6.945		18	8.422	7.83
	53	7.544	7.056	6.620		23	8.299	7.72
						28	8.193	7.63
54	4	8.957	8.269	7.668		33	8.060	7.51
	9	9.442	8.718	8.085		38	7.834	7.36
	14	9.290	8.586	7.970		43	7.660	7.16
	19	9.063	8.383	7.788		48	7.382	6.91
	24	8.934	8.270	7.688		53	7.039	6.60
	29	8.799	8.153	7.586		58	6.614	6.23
	34	8.629	8.005	7.457				
	39	8.406	7.810	7.286	59	4	8.075	7.51
	44	8,130	7.569	7.073		9	8.519	7.92
	49	7.780	7.262	6.802		14	8.399	7.82
	54	7.362	6.897	6.480		19	8.207	7.64
						24	8.104	7.55
55	5	8.931	8.256	7.665		29	7.999	7.46
	10	9.256	8.560	7.951		34	7.866	7.34
	15	9.077	8.403	7.812		39	7.689	7.18
	20	8.869	8.216	7.643		44	7.469	6.99
	25	8.754	8.116	7.555		49	7.186	6.74
	30	8.619	7.999	7.453		54	6.850	6.44
	35	8.448	7.849	7.322		59	6.421	6.06
	40	8.221	7.651	7.146				
	45	7.948	7.411	6.935	60	5	8.011	7.46
	50	7.593	7.098	6.658		10	8.314	7.75
	55	7.179	6.735	6.336		15	8.170	7.62
						20	7.995	7.46
56	1	6.843	6.346	5.911		25	7.906	7.3
	6	8.902	8.241	7.662		30	7.802	7.29
	11	9.052	8.386	7.801		35	7.669	7.17
	16	8.858	8.214	7.648		40	7.490	7.01
	21	8.679	8.053	7.502		45	7.274	6.82
	26	8.570	7.958	7.419		50	6.989	6.56
	31	8.436	7.841	7.316		55	6.659	6.27
	36	8.264	7.690	7.183		60	6.226	5.88
	41	8.035	7.489	7.005				

s of Annuities on Two joint Lives by the Northampton Table of Mortality.

ger	4 per cent.	5 per cent.	6 per cent.
1	6.123	5.725	5.372
6	7.944	7.415	6.945
1	8.092	7.557	7.081
6	7.935	7.416	6.953
1	7.787	7.281	6.830
6	7.704	7.207	6.764
1	7.601	7.116	6.682
6	7.469	6.998	6.577
1	7.290	6.838	6.434
6	7.076	6.648	6.263
1	6.795	6.395	6.035
6	6.465	6.100	5.770
1	6.030	5.712	5.420
2	6.894	6.452	6.059
7	7.828	7.319	6.865
2	7.863	7.357	6.905
7	7.700	7.208	6.770
2	7.580	7.100	6.670
7	7.499	7.027	6.605
2	7.397	6.937	6.524
7	7.265	6.819	6.418
2	7.088	6.660	6.276
7	6.875	6.469	6.104
2	6.600	6.222	5.880
7	6.270	5.925	5.613
2	5.831	5.533	5.259
3	7.048	6.605	6.209
8	7.669	7.184	6.750
3	7.625	7.147	6.719
8	7.462	6.998	6.583
3	7.365	6.910	6.503
8	7.286	6.839	6.439
3	7.186	6.750	6.359
8	7.053	6.631	6.252
3	6 881	6.477	6.112
8	6.667	6.283	5.937
3	6.399	6.042	5.719
8	6.070	5.744	5.450
3	5.626	5.347	5.089
4	7.076	6.641	6.251
9	7.470	7.010	6.598
14	7.381	6.931	6.527
19	7.226	6.789	6.396
24	7.147	6.717	6.331
29	7.069	6.648	6.268
34	6.971	6.559	6.189
39	6.838	6.440	6.081
44	6.671	6.289	5.944
49	6.454	6.093	5.767
54	6.196	5.860	5.555
59	5.867	5.561	5.284
64	5.417	5.158	4.917

Ages.		4 per cent.	5 per cent.	6 per cent.
Older	Younger			
65	5	6.963	6.546	6.171
	10	7.236	6.803	6.414
	15	7.127	6.705	6.325
	20	6.986	6.576	6.205
	25	6.920	6.515	6.151
	30	6.844	6.447	6.089
	35	6.747	6.360	6.010
	40	6.614	6.240	5.901
	45	6.453	6.094	5.769
	50	6.236	5.897	5.590
	55	5.986	5.671	5.384
	60	5.658	5.372	5.112
	65	5.201	4.960	4.736
66	1	5.295	4.996	4.728
	6	6.846	6.447	6.087
	11	6.987	6.581	6.215
	16	6.866	6.472	6.115
	21	6.749	6.364	6.015
	26	6.689	6.309	5.966
	31	6.615	6.243	5.905
	36	6.520	6.156	5.827
	41	6.388	6.037	5.718
	46	6.230	5.894	5.588
	51	6.019	5.701	5.412
	56	5.774	5.479	5.209
	61	5.447	5.180	4.938
	66	4.982	4.759	4.551
67	2	5.896	5.569	5.276
	7	6.684	6.306	5.963
	12	6.730	6.351	6.009
	17	6.604	6.236	5.903
	22	6.512	6.151	5.824
	27	6.454	6.098	5.776
	32	6.382	6.033	5.717
	37	6.288	5.948	5.639
	42	6.159	5.831	5.532
	47	6.004	5.690	5.403
	52	5.801	5.504	5.233
	57	5.559	5.283	5.031
	62	5.285	4.986	4.760
	67	4.760	4.555	4.363
68	3	5.965	5.641	5.352
	8	6.490	6.134	5.811
	13	6.468	6.116	5.796
	18	6.343	6.001	5.689
	23	6.271	5.934	5.628
	28	6.215	5.883	5.581
	33	6.146	5.820	5.524
	38	6.052	5.735	5.446
	43	5.929	5.622	5.343
	48	5.774	5.481	5.213
	53	5.580	5.303	5.050
68	58	5.341	5.084	4.849
	63	5.017	4.786	4.576
	68	4.537	4.348	4.171

TABLE VIII.

Values of Annuities on Two joint Lives by the Northampton Table of

Ages.				
Older	Younger	4 per cent.	5 per cent.	6 per cent.
69	4	5.924	5.611	5.332
	9	6.262	5.929	5.626
	14	6.202	5.876	5.578
	19	6.084	5.766	5.476
	24	6.027	5.713	5.427
	29	5.973	5.664	5.383
	34	5.906	5.603	5.326
	39	5.813	5.518	5.249
	44	5.696	5.411	5.150
	49	5.541	5.268	5.019
	54	5.357	5.100	4.864
	59	5.121	4.883	4.665
	64	4.798	4.585	4.390
	69	4.312	4.140	3.977
70	5	5.768	5.472	5.209
	10	6.008	5.700	5.418
	15	5.933	5.631	5.355
	20	5.826	5.532	5.262
	25	5.780	5.489	5.223
	30	5.729	5.442	5.180
	35	5.663	5.382	5.125
	40	5.571	5.298	5.047
	45	5.460	5.195	4.953
	50	5.306	5.054	4.822
	55	5.132	4.893	4.674
	60	4.900	4.680	4.478
	65	4.573	4.378	4.199
	70	4.087	3.930	3.781
71	1	4.380	4.169	3.976
	6	5.610	5.331	5.084
	11	5.744	5.460	5.199
	16	5.660	5.382	5.127
	21	5.572	5.300	5.050
	26	5.532	5.263	5.016
	31	5.483	5.218	4.974
	36	5.419	5.159	4.920
	41	5.329	5.076	4.844
	46	5.222	4.978	4.753
	51	5.074	4.841	4.626
	56	4.905	4.685	4.482
	61	4.679	4.476	4.289
	66	4.349	4.169	4.005
	71	3.862	3.719	3.584
72	2	4.814	4.588	4.380
	7	5.418	5.157	4.929
	12	5.478	5.216	4.976
	17	5.389	5.133	4.899
	22	5.321	5.070	4.840
	27	5.283	5.035	4.807
	32	5.236	4.992	4.767
	37	5.174	4.934	4.714
	42	5.087	4.854	4.640
	47	4.983	4.758	4.551

Ages.			
Older	Younger	4 per cent.	5 per c
72	52	4.845	4.63
	57	4.679	4.47
	62	4.458	4.27
	67	4.124	3.96
	72	3.639	3.51
73	3	4.811	4.59
	8	5.204	4.96
	13	5.212	4.97
	18	5.123	4.88
	23	5.072	4.84
	28	5.036	4.80
	33	4.991	4.76
	38	4.930	4.71
	43	4.848	4.63
	48	4.746	4.53
	53	4.614	4.41
	58	4.455	4.26
	63	4.236	4.06
	68	3.901	3.75
	73	3.421	3.30
74	4	4.726	4.51
	9	4.969	4.74
	14	4.950	4.731
	19	4.866	4.651
	24	4.827	4.61
	29	4.792	4.58
	34	4.749	4.54
	39	4.690	4.48
	44	4.613	4.417
	49	4.511	4.32
	54	4.389	4.20
	59	4.234	4.064
	64	4.019	3.864
	69	3.683	3.547
	74	3.211	3.105
75	5	4.557	4.36
	10	4.725	4.52
	15	4.695	4.495
	20	4.619	4.424
	25	4.589	4.396
	30	4.557	4.365
	35	4.516	4.327
	40	4.457	4.272
	45	4.386	4.206
	50	4.285	4.112
	55	4.171	4.006
	60	4.021	3.866
	65	3.806	3.665
	70	3.471	3.347
	75	3.015	2.917
76	6	4.403	4.221

nnuities on Two joint Lives by the Northampton Table of Mortality.

per cent.	5 per cent.	6 per cent.	Ages.		4 per cent.	5 per cent.	6 per cent.
			Older	Younger			
4.487	4.301	4.148	79	49	3.490	3.369	3.256
4.452	4.270	4.101		54	3.416	3.299	3.189
4.391	4.212	4.046		59	3.322	3.210	3.105
4.365	4.188	4.024		64	3.192	3.083	2.990
4.335	4.160	3.997		69	2.979	2.887	2.799
4.295	4.123	3.962		74	2.659	2.580	2.511
4.238	4.069	3.912		79	2.271	2.217	2.161
4.171	4.006	3.853					
4.074	3.916	3.768	80	10	3.517	3.395	3.281
3.966	3.815	3.674		15	3.492	3.372	3.259
3.821	3.679	3.546		20	3.443	3.325	3.214
3.606	3.477	3.357		25	3.425	3.308	3.198
3.270	3.159	3.059		30	3.406	3.290	3.181
2.833	2.750	2.668		35	3.383	3.268	3.160
				40	3.349	3.236	3.130
4.222	4.055	3.899		45	3.308	3.197	3.093
4.368	4.195	3.943		50	3.247	3.140	3.039
4.210	4.045	3.892		55	3.180	3.076	2.978
4.164	4.001	3.850		60	3.092	2.992	2.899
4.140	3.979	3.829		65	2.965	2.873	2.786
4.111	3.952	3.804		70	2.757	2.675	2.598
4.073	3.916	3.770		75	2.448	2.381	2.323
4.019	3.865	3.722		80	2.068	2.018	1.969
3.954	3.805	3.666					
3.864	3.720	3.586	81	11	3.264	3.156	3.054
3.761	3.623	3.494		16	3.235	3.128	3.028
3.621	3.492	3.371		21	3.195	3.091	2.992
3.405	3.289	3.180		26	3.181	3.077	2.979
3.070	2.971	2.882		31	3.164	3.060	2.963
2.656	2.583	2.511		36	3.142	3.040	2.944
				41	3.109	3.009	2.914
4.016	3.864	3.722		46	3.072	2.973	2.881
4.022	3.871	3.729		51	3.015	2.920	2.829
3.964	3.815	3.677		56	2.953	2.861	2.774
3.930	3.783	3.646		61	2.870	2.782	2.699
3.908	3.762	3.626		66	2.746	2.664	2.587
3.881	3.737	3.602		71	2.542	2.470	2.402
3.844	3.702	3.570		76	2.258	2.195	2.147
3.794	3.655	3.525		81	1.869	1.827	1.786
3.731	3.596	3.469					
3.648	3.518	3.396	82	12	3.020	2.924	2.833
3.549	3.424	3.308		17	2.987	2.893	2.804
3.414	3.297	3.188		22	2.958	2.865	2.777
3.199	3.095	2.996		27	2.945	2.853	2.765
2.869	2.780	2.701		32	2.929	2.838	2.751
2.470	2.410	2.346		37	2.909	2.818	2.733
				42	2.878	2.789	2.705
3.775	3.638	3.510		47	2.843	2.756	2.673
3.759	3.624	3.497		52	2.792	2.707	2.627
3.704	3.571	3.447		57	2.733	2.651	2.574
3.679	3.548	3.424		62	2.656	2.578	2.504
3.659	3.528	3.406		67	2.533	2.461	2.393
3.633	3.505	3.384		72	2.334	2.271	2.211
3.598	3.471	3.352		77	2.077	2.013	1.975
3.552	3.428	3.312		82	1.681	1.642	1.606

Values of Annuities on Two joint Lives by the Northampton Ta

Ages.		4 per cent.	5 per cent	6 per cent.
Older	Younger			
83	13	2.794	2.709	2.628
	18	2.760	2.677	2.598
	23	2.740	2.657	2.579
	28	2.728	2.646	2.568
	33	2.713	2.632	2.555
	38	2.694	2.613	2.537
	43	2.666	2.587	2.511
	48	2.632	2.554	2.481
	53	2.585	2.510	2.438
	58	2.530	2.457	2.388
	63	2.457	2.387	2.321
	68	2.336	2.272	2.211
	73	2.141	2.085	2.032
	78	1.899	1.838	1.810
	83	1.510	1.472	1.441
84	14	2.622	2.545	2.472
	19	2.589	2.513	2.442
	24	2.574	2.499	2.429
	29	2.563	2.489	2.418
	34	2.549	2.476	2.406
	39	2.530	2.457	2.388
	44	2.505	2.433	2.365
	49	2.470	2.400	2.334
	54	2.428	2.360	2.295
	59	2.376	2.310	2.247
	64	2.305	2.242	2.182
	69	2.183	2.126	2.071
	74	1.991	1.941	1.894
	79	1.751	1.750	1.672
	84	1.387	1.357	1.330
85	15	2.462	2.393	2.327
	20	2.431	2.364	2.299
	25	2.421	2.354	2.290
	30	2.411	2.344	2.280
	35	2.398	2.331	2.268
	40	2.379	2.313	2.251
	45	2.356	2.291	2.230
	50	2.322	2.258	2.198
	55	2.284	2.222	2.164
	60	2.234	2.174	2.118
	65	2.163	2.107	2.053
	70	2.042	1.991	.1941
	75	1.856	1.811	1.769
	80	1.608	1.573	1.539
	85	1.339	1.256	1.232
86	16	2.315	2.253	2.194
	21	2.290	2.229	2.171
	26	2.282	2.221	2.163
	31	2.272	2.212	2.154
	36	2.260	2.200	2.143
	41	2.241	2.182	2.126
	46	2.221	2.162	2.107
	51	2.188	2.131	2.077

Ages.		4 per cent.
Older	Younger	
86	56	2.153
	61	2.105
	66	2.035
	71	1.914
	76	1.739
	81	1.478
	86	1.195
87	17	2.177
	22	2.158
	27	2.151
	32	2.142
	37	2.130
	42	2.113
	47	2.093
	52	2.063
	57	2.030
	62	1.985
	67	1.915
	72	1.794
	77	1.633
	82	1.356
	87	1.124
88	18	2.061
	23	2.048
	28	2.041
	33	2.033
	38	2.022
	43	2.006
	48	1.987
	53	1.960
	58	1.928
	63	1.886
	68	1.817
	73	1.697
	78	1.546
	83	1.259
	88	1.030
89	19	1.904
	24	1.895
	29	1.889
	34	1.882
	39	1.872
	44	1.859
	49	1.840
	54	1.817
	59	1.788
	64	1.751
	69	1.685
	74	1.570
	79	1.427
	84	1.164
	89	1.015

of Annuities on Two joint Lives by the Northampton Table of Mortality.

4 per cent.	5 per cent	6 per cent.	Ages.		4 per cent.	5 per cent.	6 per cent.
			Older	Younger			
1.704	1.670	1.638	93	23	.809	.798	.788
1.699	1.665	1.633		28	.808	.797	.786
1.694	1.660	1.628		33	.806	.795	.785
1.688	1.654	1.622		38	.804	.793	.783
1.679	1.646	1.614		43	.800	.790	.779
1.668	1.635	1.604		48	.797	.786	.776
1.651	1.619	1.590		53	.790	.780	.770
1.633	1.601	1.570		58	.784	.773	.763
1.608	1.577	1.547		63	.774	.764	.754
1.575	1.544	1.515		68	.760	.750	.740
1.515	1.486	1.459		73	.733	.723	.714
1.413	1.387	1.361		78	.697	.688	.679
1.278	1.255	1.234		83	.614	.606	.599
1.054	1.038	1.021		88	.554	.547	.541
.922	.909	.895		93	.365	.361	.357
1.432	1.407	1.382	94	24	.520	.514	.508
1.429	1.404	1.379		29	.519	.513	.507
1.425	1.400	1.376		34	.518	.512	.506
1.420	1.395	1.371		39	.517	.511	.505
1.413	1.388	1.364		44	.515	.509	.503
1.405	1.380	1.356		49	.512	.507	.501
1.391	1.367	1.343		54	.509	.503	.498
1.377	1.353	1.330		59	.505	.499	.494
1.358	1.334	1.311		64	.500	.494	.489
1.330	1.307	1.285		69	.491	.485	.480
1.280	1.259	1.238		74	.474	.469	.464
1.200	1.180	1.160		79	.453	.448	.443
1.078	1.061	1.044		84	.403	.398	.394
.902	.892	.879		89	.373	.369	.365
.756	.748	.737		94	.201	.199	.197
1.142	1.124	1.107	95	25	.236	.234	.232
1.140	1.122	1.105		30	.236	.234	.231
1.137	1.119	1.102		35	.235	.233	.231
1.134	1.116	1.099		40	.235	.233	.231
1.128	1.111	1.094		45	.234	.232	.230
1.122	1.105	1.089		50	.233	.231	.229
1.113	1.095	1.079		55	.232	.230	.228
1.102	1.085	1.069		60	.230	.228	.226
1.088	1.071	1.055		65	.228	.226	.224
1.067	1.050	1.035		70	.224	.222	.220
1.028	1.012	.997		75	.217	.215	.213
.970	.955	.942		80	.208	.206	.204
.864	.852	.840		85	.187	.185	.183
.738	.734	.725		90	.177	.175	.174
.583	.576	.569		95	.060	.059	.058

TABLE IX.

Value of Reversion of £1 on a Single Life. (Northampton Rate of

Age.	3 per cent.		4 per cent.	5 per cent.	6 pe
	Single Prem.	Annual Prem.	Single Prem.	Single Prem.	Singl
8	.362554	.016566	.282185	.22733	.1
9	.364690	.016719	.283615	.22810	.1
10	.369029	.017035	.287508	.23148	.1
11	.374368	.017429	.292523	.23605	.1
12	.380086	.017858	.297985	.24110	.2
13	.385980	.018309	.303654	.24638	.2
14	.392056	.018783	.309550	.25191	.2
15	.398320	.019282	.315681	.25771	.2
16	.404782	.019808	.322058	.26381	.2
17	.411116	.020334	.328315	.26981	.2
18	.417095	.020841	.334188	.27538	.2
19	.422696	.021326	.339650	.28057	.2
20	.428006	.021794	.344792	.28538	.2
21	.432890	.022233	.349458	.28967	.2
22	.437540	.022657	.353858	.29367	.2
23	.442275	.023097	.358358	.29781	.2
24	.447097	.023553	.362962	.30200	.2
25	.452010	.024025	.367673	.30633	.2
26	.457016	.024515	.372492	.31081	.2
27	.462115	.025023	.377423	.31538	.2
28	.467312	.025552	.382473	.32010	.2
29	.472609	.026101	.387646	.32491	.2
30	.478009	.026672	.392942	.32991	.2
31	.483516	.027267	.398373	.33500	.2
32	.489132	.027887	.403935	.34029	.2
33	.494860	.028533	.409638	.34571	.2
34	.500704	.029208	.415565	.35129	.3
35	.506667	.029914	.421481	.35705	.3
36	.512754	.030651	.427635	.36300	.3
37	.518969	.031423	.433954	.36910	.3
38	.525314	.032233	.440438	.37543	.3
39	.531796	.033082	.447100	.38195	.3
40	.538419	.033975	.453946	.38871	.3
41	.545060	.034896	.460831	.39548	.3
42	.551713	.035846	.467750	.40233	.3
43	.558371	.036826	.474692	.40919	.3
44	.565158	.037855	.481958	.41629	.3
45	.572077	.038938	.489096	.42357	.3
46	.579133	.040079	.496569	.43110	.3
47	.586328	.041283	.504235	.43886	.3
48	.593668	.042555	.512054	.44686	.3
49	.601156	.043900	.520162	.45510	.4
50	.608661	.045301	.528273	.46338	.4
51	.616035	.046730	.536208	.47157	.4
52	.623391	.048212	.544242	.47976	.4

Value of Reversion of £1 on a Single Life. (Northampton Rate of Mortality.)

Age.	3 per cent.		4 per cent.	5 per cent.	6 per cent.
	Single Prem.	Annual Prem.	Single Prem.	Single Prem.	Single Prem.
53	.630857	.049776	.552388	.48819	.43509
54	.638432	.051429	.560692	.49681	.44375
55	.646115	.053178	.569188	.50562	.45264
56	.653906	.055031	.577781	.51462	.46175
57	.661801	.056996	.586562	.52386	.47115
58	.669801	.059082	.595504	.53329	.48077
59	.677901	.061300	.604600	.54291	.49062
60	.686096	.063661	.613846	.55276	.50075
61	.694382	.066176	.623242	.56281	.51111
62	.702752	.068860	.632777	.57305	.52175
63	.711359	.071782	.642642	.58371	.53285
64	.720052	.074916	.652654	.59457	.54423
65	.728990	.078347	.663015	.60591	.56617
66	.738017	.082050	.673531	.61743	.56840
67	.747123	.086053	.684196	.62919	.58085
68	.756292	.090387	.694996	.64114	.59364
69	.765504	.095081	.705873	.65329	.60666
70	.774733	.100170	.716850	.66557	.61985
71	.783946	.105684	.727854	.67791	.63326
72	.793096	.111645	.738831	.69029	.64674
73	.802121	.118066	.749708	.70262	.66015
74	.810938	.124930	.760369	.71476	.67345
75	.819426	.132172	.770669	.72648	.68631
76	.827415	.139638	.780377	.73757	.69853
77	.835381	.147805	.790100	.74871	.71082
78	.843519	.157007	.800081	.76024	.72355
79	.852121	.167834	.810704	.77257	.73730
80	.860733	.180013	.821388	.78500	.75128
81	.868951	.193128	.831627	.79700	.76475
82	.876815	.207317	.841465	.80857	.77777
83	.884012	.221987	.850485	.81919	.78983
84	.889503	.234467	.857369	.82729	.79900
85	.894559	.247107	.863708	.83471	.80743
86	.899170	.259739	.869485	.84152	.81513
87	.903523	.272773	.874938	.84795	.82238
88	.907227	.284824	.879554	.85333	.82843
89	.912239	.302754	.885858	.86076	.83687
90	.918599	.328687	.893915	.87033	.84779
91	.927154	.370708	.904850	.88348	.86291
92	.936206	.427439	.916481	.89748	.87909
93	.946438	.514659	.929708	.91353	.89777
94	.955253	.621817	.941150	.92743	.91408
95	.963804	.775562	.952292	.94105	.93004
96	.970874	.970874			

TABLE X.

Logarithm and its Arithmetical Complement of the number which completes Year of Age according to the Carlisle Table of Mortality.

Age.	Log l_m	— Log l_m	Age.	Log l_m	— Log l_m
0	4.0000000	$\bar{4}$.0000000	52	3.6310377	$\bar{4}$.3689623
1	3.9274217	.0725783	53	.6243852	.3756148
2	.8909238	.1090762	54	.6173149	.3826851
3	.8617733	.1382267	55	.6099144	.3900856
4	.8449739	.1550261	56	.6020600	.3979400
5	.8323173	.1676827	57	.5937290	.4062710
6	.8245163	.1754837	58	.5845574	.4154426
7	.8191489	.1808511	59	.5739154	.4260846
8	.8153120	.1846880	60	.5614592	.4385408
9	.8124454	.1875546	61	.5466660	.4533340
10	.8102325	.1897675	62	.5308398	.4691602
11	.8082785	.1917215	63	.5142820	.4857180
12	.8061800	.1938200	64	.4973444	.5026556
13	.8040030	.1959970	65	.4797192	.5202808
14	.8017466	.1982534	66	.4614985	.5385015
15	.7993405	.2006595	67	.4426365	.5573635
16	.7966437	.2033563	68	.4229180	.5770820
17	.7937206	.2062794	69	.4022614	.5977386
18	.7907073	.2092927	70	.3803922	.6196078
19	.7876730	.2123270	71	.3573630	.6426370
20	.7846173	.2153827	72	.3310222	.6689778
21	.7815400	.2184600	73	.3003781	.6996219
22	.7785130	.2214870	74	.2650538	.7349462
23	.7754648	.2245352	75	.2240148	.7759852
24	.7723951	.2276049	76	.1804126	.8195874
25	.7693035	.2306965	77	.1332195	.8667805
26	.7661153	.2338847	78	.0838608	.9161392
27	.7629035	.2370965	79	.0338257	_.9661743
28	.7595168	.2404832	80	2.9790929	3.0209071
29	.7557224	.2442776	81	.9227255	.0772745
30	.7514331	.2485669	82	.8603380	.1396620
31	.7470232	.2529768	83	.7944880	.2055120
32	.7425680	.2574320	84	.7234557	.2765443
33	.7381461	.2618539	85	.6483600	.3516400
34	.7337588	.2662412	86	.5646661	.4353339
35	.7293268	.2706732	87	.4712917	.5287083
36	.7248491	.2751509	88	.3654880	.6345120
37	.7202420	.2797580	89	.2576786	.7423214
38	.7155019	.2844981	90	.1522883	.8477117
39	.7106250	.2893750	91	.0211893	_.9788107
40	.7054360	.2945640	92	1.8750613	2.1249387
41	.6997510	.3002490	93	.7323938	.2676062
42	.6937269	.3062731	94	.6020600	.3979400
43	.6874398	.3125602	95	.4771213	.5228787
44	.6810602	.3189398	96	.3617278	.6382722
45	.6745856	.3254144	97	.2552725	.7447275
46	.6681062	.3318738	98	.1461280	.8538720
47	.6616234	.3383766	99	.0413927	_.9586073
48	.6552345	.3447655	100	0.9542425	$\bar{1}$.0457575
49	.6491401	.3508599	101	.8450980	.1549020
50	.6431565	.3568435	102	.6989700	.3010300
51	.6372895	.3627105	103	.4771213	.5228787

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 3 per Cent.)

Age.	D.	N.	S.	M.	R.
0	10000.000	173197.234	3702001.698	4664.129	70035.663
1	8214.563	164982.671	3528804.464	3169.954	65371.534
2	7332.454	157650.218	3363821.793	2527.104	62201.580
3	6656.740	150993.477	3206171.575	2064.957	59674.476
4	6217.632	144775.845	3055178.098	1819.735	57609.519
5	5863.152	138912.693	2910402.253	1646.351	55789.784
6	5591.045	133321.648	2771489.560	1545.015	54143.434
7	5361.525	127960.123	2638167.912	1478.341	52598.419
8	5159.579	122800.544	2510207.790	1432.556	51120.078
9	4976.344	117824.200	2387407.245	1399.600	49687.522
10	4806.847	113017.353	2269583.046	1375.045	48287.922
11	4645.891	108371.462	2156565.693	1354.095	46912.877
12	4488.831	103882.631	2048194.230	1332.352	45558.783
13	4336.298	99546.333	1944311.599	1310.561	44226.431
14	4188.181	95358.152	1844765.266	1288.744	42915.870
15	4043.730	91314.421	1749407.115	1266.279	41627.126
16	3901.648	87412.773	1658092.694	1241.976	40360.847
17	3762.597	83650.176	1570679.920	1216.565	39118.871
18	3627.749	80022.427	1487029.745	1191.307	37902.306
19	3497.564	76524.862	1407007.318	1166.785	36710.999
20	3371.885	73152.977	1330482.456	1142.977	35544.214
21	3250.560	69902.417	1257329.478	1119.862	34401.238
22	3133.964	66768.452	1187427.062	1097.943	33281.376
23	3021.403	63747.049	1120658.609	1076.662	32183.434
24	2912.740	60834.310	1056911.560	1056.000	31106.773
25	2807.843	58026.467	996077.251	1035.741	30050.773
26	2706.122	55320.344	938050.784	1016.002	29014.832
27	2607.945	52712.399	882730.440	996.6439	27998.830
28	2512.317	50200.082	830018.041	976.9755	27002.186
29	2417.926	47782.156	779817.959	955.7581	26025.211
30	2324.429	45457.727	732035.803	932.6869	25069.453
31	2233.928	43223.799	686578.076	909.8876	24136.766
32	2146.727	41077.072	643354.278	887.7524	23226.879
33	2063.088	39013.984	602277.206	866.6389	22339.127
34	1982.865	37031.119	563263.222	846.5065	21472.488
35	1905.566	35125.553	526232.103	826.9604	20625.982
36	1831.087	33294.466	491106.550	807.9836	19799.022
37	1758.995	31535.470	457812.085	789.2245	18991.039
38	1689.225	29846.246	426276.614	770.6867	18201.815
39	1621.710	28224.536	396430.368	752.3729	17431.129
40	1555.776	26668.760	368205.833	733.6730	16678.756
41	1490.819	25177.941	341537.073	714.0295	15945.083
42	1427.459	23750.482	316359.132	694 0913	15231.054
43	1365.964	22384.519	292608.650	674.1728	14536.963
44	1306.840	21077.679	270224.131	654.8344	13862.790
45	1250.001	19827.678	249146.452	636.0593	13207.956
46	1195.622	18632.056	229318.774	618.0877	12571.897
47	1143.599	17488.457	210686.718	600.8888	11953.810
48	1093.077	16395.380	193198.262	584.6749	11352.921
49	1047.408	15347.972	176802.882	569.8371	10768.246
50	1002.987	14344.985	161454.911	555.9585	10198.373
51	960.7073	13384.277	147109.926	542.8922	9642.415

TABLE XI.

Preparatory Table for finding the Values of Annuities, Assurances, &c
(Carlisle 3 per Cent.)

Age.	D.	N.	S.	M.	
52	919.3947	12464.883	133725.648	529.5614	9099.
53	879.0475	11583.835	121260.766	515.9926	8569.
54	839.6626	10746.173	109674.930	502.2111	8053.
55	801.4327	9944.7400	98928.7577	488.4374	7551.
56	764.1444	9180.5956	88984.0177	474.4917	7063.
57	727.7919	8452.8038	79803.4221	460.3959	6588.
58	691.8233	7760.9755	71350.6183	445.6301	6128.
59	655.4193	7105.5562	63589.6429	429.3714	5682.
60	618.3376	6487.2186	56484.0867	411.3797	5253.
61	580.2235	5906.9951	49996.8681	391.2754	4842.
62	543.1651	5363.8300	44089.8730	371.1167	4450.
63	507.6178	4856.2121	38726.0431	351.3898	4079.
64	473.9822	4382.2300	33869.8310	332.5391	3728.
65	441.8752	3940.3548	29487.6010	314.2374	3395.
66	411.3786	3528.9762	25547.2462	296.6110	3081.
67	382.4216	3145.5546	22018.2700	279.6359	2784.
68	354.8025	2791.7521	18871.7155	263.1553	2505.
69	328.4679	2463.2842	16079.9634	247.1547	2242.
70	303.2400	2160.0442	13616.6792	231.4938	1994.
71	279.2030	1880.8412	11456.6350	216.2891	1763.
72	255.1185	1625.7227	9575.7937	200.3367	1547.
73	230.8132	1394.9095	7950.0710	183.4621	1346.
74	206.5852	1188.3243	6555.1615	165.9567	1163.
75	182.4832	1005.8411	5366.8372	147.8718	997.
76	160.2447	845.5965	4360.9960	130.9483	849.
77	139.5575	706.0390	3515.3996	114.9285	718.
78	120.9365	585.1025	2809.3606	100.3722	603.
79	104.6369	480.4656	2224.2581	87.5951	503.
80	89.56018	390.9054	1743.7925	75.5660	415.
81	76.36780	314.5376	1352.8871	64.9822	340.
82	64.22226	250.3153	1038.3495	55.0610	275.
83	53.57947	196.7359	788.03419	46.2887	220.
84	44.17014	152.5657	591.29831	38.4400	173.
85	36.07413	116.4916	438.73257	31.6305	135.
86	28.68449	87.60711	322.24097	25.4915	103.
87	22.61795	64.98917	234.63386	20.0663	78.
88	17.21124	47.77792	169.64470	15.3184	58.
89	13.03664	34.74128	121.86677	11.6450	42.
90	9.929746	24.81154	87.12549	8.91786	31.
91	7.128560	17.68298	62.31395	6.40569	22.
92	4.943523	12.73946	44.63097	4.42849	15.
93	3.455667	9.28379	31.89152	3.08461	11.4
94	2.485197	6.79859	22.60773	2.21480	8.3
95	1.809610	4.98898	15.80914	1.61159	6.1
96	1.346959	3.64202	10.82016	1.20165	4.5
97	1.023438	2.61858	7.17813	.917360	3.3
98	.772823	1.84576	4.55955	.696554	2.4
99	.589532	1.25623	2.71379	.535772	1.7
100	.468296	.787934	1.45756	.431706	1.1
101	.353621	.434312	.669626	.330672	.7
102	.245230	.189083	.235313	.232580	.4
103	.142852	.046231	.046231	.137345	.1
104				.044884	.0

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 3½ per Cent.)

Age.	D.	N.	S.	M.	R.
0	10000.0000	156719.2811	3126762.5941	4362.1499	55413.1307
1	8174.8792	148544.4019	2970043.3130	2875.1934	51050.9808
2	7261.7797	141282.6222	2821498.9111	2238.5391	48175.7874
3	6560.7312	134721.8910	2680216.2889	1783.0580	45937.2484
4	6098.3527	128623.5383	2545494.3979	1542.5400	44154.1903
5	5722.8916	122900.6466	2416870.8596	1373.3034	42611.6504
6	5430.9303	117469.7164	2293970.2130	1274.8698	41238.3470
7	5182.8244	112286.8920	2176500.4966	1210.4185	39963.4772
8	4963.5140	107323.3780	2064213.6046	1166.3726	38753.0587
9	4764.1152	102559.2629	1956890.2266	1134.8222	37586.6861
10	4579.6155	97979.6473	1854330.9637	1111.4279	36451.8639
11	4404.8859	93574.7615	1754351.3164	1091.5645	35340.4360
12	4235.4131	89339.3484	1660776.5549	1071.0492	34248.8715
13	4071.7256	85267.6227	1571437.2065	1050.5883	33177.8223
14	3913.6476	81353.9751	1486169.5838	1030.2015	32127.2341
15	3760.4109	77593.5642	1404815.6087	1009.3103	31097.0326
16	3610.7557	73982.8085	1327222.0445	986.8188	30087.7223
17	3465.2503	70517.5582	1253239.2360	963.4162	29100.9036
18	3324.9184	67192.6398	1182721.6778	940.2667	28137.4874
19	3190.1149	64002.5249	1115529.0380	917.9000	27197.2207
20	3060.6262	60941.8987	1051526.5131	896.2896	26279.3208
21	2936.2472	58005.6515	990584.6144	875.4101	25383.0311
22	2817.2495	55188.4020	932578.9629	855.7058	24507.6210
23	2702.9422	52485.4597	877390.5609	836.6678	23651.9153
24	2593.1442	49892.3156	824905.1012	818.2736	22815.2475
25	2487.6811	47404.6344	775012.7856	800.5014	21996.9740
26	2385.9766	45018.6578	727608.1512	782.9214	21196.4726
27	2288.3059	42730.3519	682589.4934	765.9358	20413.5512
28	2193.7491	40536.6028	639859.1415	748.7614	19647.6154
29	2101.1270	38435.4758	599322.5387	730.3340	18898.8540
30	2010.1228	36425.3530	560887.0629	710.3724	18168.5309
31	1922.5265	34502.8265	524461.7099	690.7513	17458.1576
32	1838.5559	32664.2706	489958.8834	671.7937	16767.4063
33	1758.3873	30905.8833	457294.6128	653.7985	16095.6127
34	1681.8488	29224.0345	426388.7295	636.7223	15441.8142
35	1608.4759	27615.5586	397164.6950	620.2236	14805.0919
36	1538.1422	26077.4164	369549.1364	604.2828	14184.8684
37	1470.4460	24606.9704	343471.7200	588.6010	13580.5856
38	1405.2987	23201.6717	318864.7496	573.1790	12991.9846
39	1342.6146	21859.0571	295663.0779	558.0170	12418.8057
40	1281.8053	20577.2518	273804.0208	542.6101	11860.7887
41	1222.3531	19354.8987	253226.7690	526.5040	11318.1786
42	1164.7488	18190.1499	233871.8703	510.2353	10791.6745
43	1109.1869	17080.9630	215681.7204	494.0611	10281.4393
44	1056.0509	16024.9121	198600.7575	478.4338	9787.3782
45	1005.2402	15019.6719	182575.8453	463.3350	9308.9444
46	956.8639	14062.8080	167556.1731	448.9522	8845.6094
47	910.8083	13151.9998	153493.3654	435.2544	8396.6572
48	867.1570	12284.8428	140341.3656	422.4033	7961.4028
49	826.1576	11458.6852	128056.5228	410.7282	7538.9995
50	787.2977	10671.3875	116597.8376	399.8059	7128.2713
51	750.4672	9920.9203	105926.4501	389.5990	6728.4654

TABLE XII.

Preparatory Table for finding the Values of Annuities, Assurances,
(Carlisle 3½ per Cent.)

Age.	D.	N.	S.	M.	
52	714.7259	9206.1945	96005.5298	379.2358	6338.
53	680.0592	8526.1353	86799.3353	368.7386	5959.
54	646.4516	7879.6836	78273.2000	358.1282	5590.
55	614.0379	7265.6457	70393.5164	347.5752	5232.
56	582.6402	6683.0056	63127.8707	336.9420	4885.
57	552.2415	6130.7640	56444.8651	326.2462	4548.
58	522.4167	5608.3473	50314.1012	315.0962	4222.
59	492.5324	5115.8149	44705.7538	302.8781	3906.
60	462.4217	4653.3932	39589.9389	289.4231	3604.
61	431.8219	4221.5713	34936.5457	274.4608	3314.
62	402.2889	3819.2824	30714.9744	259.5305	3040.
63	374.1450	3445.1373	26895.6920	244.9906	2780.
64	347.6658	3097.4715	23450.5547	231.1636	2535.
65	322.5196	2774.9219	20353.0832	217.8042	2304.
66	298.8377	2476.0842	17578.1613	204.9998	2086.
67	276.4605	2199.6237	15102.0771	192.7282	1881.
68	255.2550	1944.3687	12902.4534	180.8715	1688.
69	235.1675	1709.2013	10958.0847	169.4159	1508.
70	216.0567	1493.1446	9248.8834	158.2576	1338.
71	197.9695	1295.1751	7755.7388	147.4766	1180.
72	180.0184	1115.1567	6460.5637	136.2202	1032.
73	162.0812	953.0756	5345.4070	124.3705	896.
74	144.3670	808.7086	4392.3314	112.1374	772.
75	126.9079	681.8007	3583.6228	99.56024	660.
76	110.9037	570.8970	2901.8221	87·84764	560.
77	96.1197	474.7773	2330.9251	76.81403	472.
78	82.8922	391.8851	1856.14780	66.83690	395.
79	71.3737	320.51141	1464.26271	58.12152	329.
80	60.79459	259.71682	1143.75130	49.95604	270.
81	51.589005	208.127819	884.034478	42.80631	221.
82	43.174700	164.953119	675.906659	36.13656	178.
83	35.845863	129.107256	510.953540	30.26774	142.
84	29.408051	99.699205	381.846284	25.04211	111.
85	23.901782	75.797423	282.147079	20.53031	86.
86	19.045660	56.751763	206.349656	16.48246	66.
87	14.841618	41.910145	149.597893	12.92248	49.
88	11.239247	30.670898	107.687748	9.821995	36.
89	8.472029	22.198869	77.016850	7.434849	27.
90	6.421801	15.777068	54.817981	5.671114	19.
91	4.587937	11.1891305	39.0409134	4.054413	13.
92	3.166278	8.0228525	27.8517829	2.787902	9.
93	2.2026281	5.8202244	19.8289304	1.931324	7.
94	1.5764024	4.2438220	14.0087060	1.379583	5.1
95	1.1423205	3.1015015	9.7648840	.9988096	3.7
96	.8461633	2.2553382	6.6633825	.7412817	2.7
97	.6398212	1.6155170	4.4080443	.5635536	2.0
98	.4808101	1.1347069	2.7925273	.4261792	1.4
99	.3650043	.7697026	1.6578204	.3266326	1.0
100	.2885410	.4811616	.8881178	.2625124	.7
101	.2168317	.2643300	.4069562	.2005605	.4
102	.1496423	.1146877	.1426262	.1407036	.2
103	.0867491	.0279385	.0279385	.0828708	.1
104				.0269938	.0

TABLE XIII.

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 4 per Cent.)

Age.	D.	N.	S.	M.	R.
0	10000.0000	142816.4335	2661123.5878	4122.4446	44587.9275
1	8135.5769	134680.8566	2518307.1543	2642.6369	40465.4829
2	7192.1228	127488.7339	2383626.2977	2012.0895	37822.8460
3	6466.5595	121022.1744	2256137.5638	1563.1464	35810.7565
4	5981.9197	115040.2547	2135115.3894	1327.2204	34247.6101
5	5586.6386	109453.6161	2020075.1347	1162.0131	32920.3897
6	5276.1398	104177.4763	1910621.5186	1066.3850	31758.3766
7	5010.8980	99166.5782	1806444.0423	1004.0718	30691.9916
8	4775.7912	94390.7871	1707277.4641	961.6917	29687.9198
9	4561.8957	89828.8914	1612886.6770	931.4805	28726.2281
10	4364.1445	85464.7469	1523057.7856	909.1869	27794.7476
11	4177.4550	81287.2919	1437593.0387	890.3490	26885.5607
12	3997.4211	77289.8708	1356305.7468	870.9865	25995.2117
13	3824.4558	73465.4150	1279015.8760	851.7682	25124.2258
14	3658.3046	69807.1103	1205550.4610	832.7115	24272.4570
15	3498.1664	66308.9440	1135743.3507	813.2772	23439.7455
16	3342.7991	62966.1449	1069434.4067	792.4548	22626.4683
17	3192.6682	59773.4766	1006468.2618	770.8931	21834.0135
18	3048.6473	56724.8294	946694.7852	749.6671	21063.1204
19	2910.9820	53813.8474	889969.9558	729.2575	20313.4533
20	2779.3965	51034.4509	836156.1084	709.6329	19584.1958
21	2653.6268	48380.8241	785121.6575	690.7630	18874.5629
22	2533.8421	45846.9820	736740.8334	673.0409	18183.7999
23	2419.3461	43427.6359	690893.8514	656.0004	17510.7590
24	2309.9092	41117.7267	647466.2155	639.6153	16854.7586
25	2205.3117	38912.4150	606348.4888	623.8604	16215.1433
26	2104.9823	36807.4327	567436.0738	608.3507	15591.2829
27	2009.1084	34798.3243	530628.6411	593.4376	14982.9322
28	1916.8285	32881.4958	495830.3168	578.4311	14389.4946
29	1827.0717	31054.4240	462948.8210	562.3986	13811.0635
30	1739.5339	29314.8901	431894.3970	545.1327	13248.6649
31	1655.7306	27659.1596	402579.5069	528.2345	12703.5322
32	1575.8003	26083.3593	374920.3473	511.9862	12175.2977
33	1499.8433	24583.5160	348836.9880	496.6369	11663.3115
34	1427.6617	23155.8543	324253.4720	482.1415	11166.6746
35	1358.8137	21797.0406	301097.6177	468.2037	10684.5331
36	1293.1499	20503.8907	279300.5771	454.8019	10216.3294
37	1230.2928	19273.5979	258796.6864	441.6813	9761.5275
38	1170.1325	18103.4654	239523.0885	428.8400	9319.8462
39	1112.5635	16990.9019	221419.6231	416.2760	8891.0062
40	1057.0669	15933.8350	204428.7212	403.5704	8474.7302
41	1003.1921	14930.6430	188494.8862	390.3520	8071.1598
42	951.3202	13979.3228	173564.2432	377.0644	7680.8078
43	901.5840	13077.7388	159584.9204	363.9174	7303.7434
44	854.2664	12223.4724	146507.1816	351.2761	6939.8260
45	809.2549	11414.2176	134283.7092	339.1211	6588.5499
46	766.6067	10647.6108	122869.4916	327.5981	6249.4288
47	726.2004	9921.4104	112221.8808	316.6766	5921.8307
48	688.0725	9233.3379	102300.4704	306.4795	5605.1541
49	652.3887	8580.9492	93067.1325	297.2600	5298.6746
50	618.7134	7962.2358	84486.1833	288.6766	5001.4146
51	586.9340	7375.3019	76523.9475	280.6938	4712.7380

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 4 per Cent.)

Age.	D.	N.	S.	M.	R.
52	556.2936	6819.0083	69148.6456	272.6278	4432.0
53	526.7666	6292.2417	62329.6373	264.4968	4159.4
54	498.3272	5793.9145	56037.3956	256.3176	3894.9
55	471.0649	5322.8496	50243.4811	248.2218	3638.6
56	444.8289	4878.0207	44920.6315	240.1036	3390.3
57	419.5934	4458.4273	40042.6108	231.9770	3150.2
58	395.0242	4063.4031	35584.1835	223.5459	2918.2
59	370.6367	3692.7664	31520.7804	214.3517	2694.7
60	346.3050	3346.4614	27828.0140	204.2753	2480.4
61	321.8343	3024.6271	24481.5526	193.1240	2276.1
62	298.3821	2726.2451	21456.9255	182.0500	2083.
63	276.1733	2450.0718	18730.6804	171.3174	1900.
64	255.3940	2194.6778	16280.6086	161.1602	1729.
65	235.8046	1958.8732	14085.9308	151.3936	1568.
66	217.4193	1741.4540	12127.0576	142.0778	1417.
67	200.1717	1541.2822	10385.6036	133.1925	1275.
68	183.9293	1357.3530	8844.3214	124.6489	1141.
69	168.6402	1188.7128	7486.9684	116.4340	1017.
70	154.1908	1034.5220	6298.2556	108.4708	900.
71	140.6034	893.9186	5263.7336	100.8139	792.
72	127.2395	766.6792	4369.8150	92.8577	691.
73	114.0103	652.6688	3603.1358	84.5224	598.
74	101.0617	551.6071	2950.4670	75.9588	514.
75	88.4126	463.1945	2398.8599	67.1967	438.
76	76.8916	386.3028	1935.6654	59.0762	370.
77	66.3212	319.9817	1549.3626	51.4631	311.
78	56.9194	263.0623	1229.3809	44.6121	260.3
79	48.7744	214.2878	966.3186	38.6563	215.7
80	41.34527	172.9426	752.0308	33.1031	177.1
81	34.91604	138.02654	579.08815	28.26413	143.9
82	29.08066	108.94588	441.06161	23.77167	115.73
83	24.02818	84.91770	332.11573	19.83768	91.961
84	19.61802	65.29968	247.19803	16.35168	72.123
85	15.86814	49.43154	181.89835	13.35635	55.772
86	12.58342	36.84812	132.46681	10.68194	42.4156
87	9.75868	27.08943	95.61869	8.34118	31.7337
88	7.35452	19.73492	68.52926	6.31235	23.3925
89	5.51711	14.21781	48.79434	4.75780	17.0801
90	4.16186	10.05595	34.57653	3.61475	12.3223
91	2.95907	7.09688	24.52058	2.57203	8.7076
92	2.032329	5.064547	17.423696	1.75910	6.1356
93	1.406997	3.657550	12.359149	1.21194	4.3765
94	1.002135	2.655416	8.701599	.861190	3.1645
95	.722693	1.932722	6.046183	.620292	2.3033
96	.532755	1.399967	4.113461	.458149	1.6830
97	.400902	.999065	2.713494	.346787	1.2249
98	.299820	.699245	1.714429	.261124	.8781
99	.226512	.472733	1.015184	.199618	.6170
100	.178200	.294532	.542451	.160018	.4174
101	.133270	.161263	.247919	.121941	.2573
102	.091531	.069731	.086656	.085329	.1354
103	.052806	.016925	.016925	.050124	.0501

TABLE XIV.

ratory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 4½ per Cent.)

).	N.	S.	M.	R.
.0000	130984.0987	2275559.365	3928.914391	36491.796787
.6507	112887.4480	2144575.266	2456.187131	32562.882396
.4633	115763.9847	2031687.818	1831.659305	30106.695265
.1815	109389.8032	1915923.833	1389.129522	28275.035960
.2523	103521.5510	1806534.030	1157.686592	26885.906438
.2598	98067.2912	1703012.479	996.393931	25728.219846
.4720	92940.8192	1604945.188	903.478546	24731.825915
.4589	88095.3604	1512004.369	843.222612	23828.347369
.0180	83499.3424	1423909.008	802.437874	22985.124757
.1685	79130.1739	1340409.666	773.502983	22182.686883
.7728	74970.4011	1261279.492	752.253370	21409.183900
.7741	71007.6270	1186309.091	734.383606	20656.930530
.8487	67233.7783	1115301.464	716.104026	19922.546924
.2818	63640.4965	1048067.686	698.047333	19206.442898
.7281	60219.7684	984427.189	680.228229	18508.395565
.3388	56964.4297	924207.421	662.143014	17828.167336
.8724	53868.5573	867242.991	642.858710	17166.024322
.6840	50925.8733	813374.434	622.985302	16523.165612
.4951	48129.3782	762448.561	603.514886	15900.180310
.4399	45471.9384	714319.182	584.882909	15296.665424
.1750	42946.7633	668847.244	567.053266	14711.782515
.3736	40547.3898	625900.481	549.991406	14144.729249
.1038	38267.2859	585353.091	534.043969	13594.737843
.6568	36100.6291	547085.805	518.783263	13060.693874
.7522	34041.8768	510985.176	504.179717	12541.910611
.1232	32085.7537	476943.299	490.205032	12037.730894
.1969	30227.5568	444857.545	476.513725	11547.525862
.0771	28462.4797	414629.989	463.411996	11071.012137
.9483	26786.5314	386167.509	450.291315	10607.600141
.8276	25196.7038	359380.978	436.340564	10157.308826
.4141	23690.2897	334184.274	421.388563	9720.968262
.9810	22263.3088	310493.984	406.824926	9299.579699
.5955	20911.7133	288230.675	392.888431	8892.754773
.2905	19631.4228	267318.962	379.786043	8499.866342
.8440	18418.5788	247687.539	367.471769	8120.080299
.8323	17269.7465	229268.960	355.687775	7752.608530
.0845	16181.6620	211999.214	344.411226	7396.920755
.2421	15151.4199	195817.552	333.424070	7052.509529
.1758	14176.2442	180666.132	322.722295	6719.085459
.7620	13253.4822	166489.888	312.301697	6396.363164
.5382	12380.9441	153236.406	301.814046	6084.061467
.1061	11556.8380	140855.461	290.955391	5782.247421
.7549	10779.0831	129298.623	280.092013	5491.292030
.5662	10045.5169	118519.540	269.395115	5211.200017
.7409	9353.7761	108474.023	259.158849	4941.804902
.1576	8701.6185	99120.247	249.363379	4682.646053
.8326	8086.7859	90418.629	240.121747	4433.282674
.6392	7507.1467	82331.843	231.404418	4193.160927
.5786	6960.5681	74824.696	223.304271	3961.756509
.7531	6444.8151	67864.128	216.015701	3738.452238
.7903	5958.0247	61419.313	209.262412	3522.436537
.5775	5498.4473	55461.288	203.011819	3313.174125

Preparatory Table for finding the Values of Annuities, Assurances,
(Carlisle 4½ per Cent.)

Age.	D.	N.	S.	M.	
52	433.5015	5064.9458	49962.841	196.726250	311
53	408.5280	4656.4178	44897.895	190.420308	291
54	384.6230	4271.7948	40241.478	184.107404	272
55	361.8415	3909.9533	35969.683	177.888669	253
56	340.0539	3569.8994	32059.730	171.682686	236
57	319.2276	3250.6718	28489.830	165.499888	218
58	299.0973	2951.5745	25239.159	159.116239	202
59	279.2893	2672.2852	22287.584	152.188017	186
60	259.7059	2412.5793	19615.299	144.631382	171
61	240.1996	2172.3797	17202.720	136.308646	156
62	221.6306	1950.7491	15030.340	128.083180	143
63	204.1530	1746.5961	13079.591	120.149450	130.
64	187.8892	1558.7069	11332.995	112.676924	118
65	172.6475	1386.0593	9774.2880	105.526181	107
66	158.4249	1227.6345	8388.2286	98.738107	96
67	145.1594	1082.4751	7160.5942	92.294729	86
68	132.7426	949.7325	6078.1191	86.128817	77
69	121.1260	828.6065	5128.3866	80.228422	68
70	110.2178	718.3887	4299.7800	74.536206	60
71	100.0245	618.3642	3581.3913	69.089109	53
72	90.08433	528.2799	2963.0271	63.456211	46
73	80.33205	447.9478	2434.7472	57.583161	40
74	70.86768	377.0801	1986.7994	51.578076	34
75	61.70111	315.3790	1609.7193	45.463220	29
76	53.40410	261.9749	1294.3402	39.823183	24
77	45.84216	216.1328	1032.3653	34.560948	20
78	39.15527	176.9775	816.2325	29.848113	17
79	33.39172	143.5858	639.2550	25.770678	14
80	28.17018	115.4156	495.6693	21.987067	11
81	23.67587	91.73973	380.2537	18.705824	9
82	19.62466	72.11507	288.5139	15.674152	7
83	16.13749	55.97758	216.3989	13.032059	5
84	13.11256	42.86502	160.4213	10.702040	4
85	10.55541	32.30962	117.5562	8.709557	3
86	8.330386	23.97923	85.24663	6.939066	2
87	6.429461	17.54977	61.26741	5.396864	2
88	4.822303	12.72747	43.71764	4.066573	1
89	3.600217	9.127248	30.99017	3.052147	1
90	2.720852	6.424396	21.86292	2.309814	
91	1.912524	4.511872	15.43853	1.635877	
92	1.307262	3.204610	10.92666	1.112972	
93	.9006973	2.303912	7.722046	.762701	
94	.6384528	1.665460	5.418134	.539242	
95	.4582197	1.207240	3.752674	.386502	
96	.3361740	.8710663	2.545433	.284188	
97	.2517633	.6193030	1.674367	.214254	
98	.1873836	.4319194	1.055064	.160716	
99	.1408899	.2910295	.6231447	.122291	
100	.1103097	.1807199	.3321151	.097778	
101	.0821018	.0986181	.1513953	.074320	
102	.0561188	.0424993	.0527772	.051872	
103	.0322213	.0102779	.0102779	.030391	
104	.0102779	.0000000		.009835	

TABLE XV.

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 5 per Cent.)

D.	N.	S.	M.	R.
10000.0000	120830.3190	1978788.651	3769.98954	30372.181932
8058.1952	112772.1238	1857958.332	2304.275259	26602.192392
7055.7823	105716.3415	1745186.208	1685.681154	24297.917133
6283.5547	99432.7868	1639469.867	1249.443166	22612.235979
5757.2719	93675.5149	1540037.080	1022.377285	21362.792813
5325.6273	88349.8876	1446361.565	864.888527	20340.415528
4981.7340	83368.1536	1358011.677	774.596464	19475.527001
4686.2327	78681.9209	1274643.524	716.320595	18700.930537
4423.8221	74258.0989	1195961.603	677.063912	17984.609942
4185.4457	70072.6532	1121703.504	649.345728	17307.546030
3965.8796	66106.7736	1051630.851	629.086591	16658.200302
3760.0725	62346.7011	985524.077	612.130892	16029.113711
3563.7595	58782.9416	923177.376	594.868932	15416.982819
3377.0864	55405.8552	864394.434	577.898649	14822.113887
3199.6055	52206.2497	808988.579	561.231407	14244.215238
3030.4077	49175.8420	756782.329	544.395808	13682.983831
2868.2362	46307.6058	707606.487	526.529459	13138.588023
2713.3291	43594.2767	661298.882	508.204998	12612.058564
2566.2555	41028.0212	617704.605	490.337610	12103.853566
2427.0364	38600.9848	576676.584	473.321050	11613.515956
2295.2569	36305.7278	538075.599	457.114802	11140.194906
2170.5244	34135.2034	501769.871	441.680280	10683.080104
2052.8085	32082.3949	467634.668	427.322585	10241.399824
1941.3817	30141.0132	435552.273	413.648590	9814.077239
1835.9121	28305.1011	405411.260	400.625738	9400.428649
1736.0850	26569.0161	377106.159	388.223022	8999.802911
1641.3209	24927.6952	350537.142	376.129671	8611.579889
1551.6453	23376.0499	325609.447	364.612193	8235.450218
1466.2782	21909.7717	302233.397	353.132979	7870.838025
1384.3081	20525.4636	280323.626	340.985663	7517.705046
1305.4316	19220.0320	259798.162	328.028526	7176.719383
1230.7076	17989.3244	240578.130	315.468036	6848.690857
1160.1402	16829.1842	222588.806	303.505664	6533.222821
1093.7025	15735.4816	205759.621	292.312802	6229.717157
1031.1520	14704.3297	190024.140	281.843288	5937.404355
972.0785	13732.2512	175319.810	271.872322	5655.561067
916.2929	12815.9583	161587.559	262.376164	5383.688745
863.4515	11952.5068	148771.601	253.167770	5121.312581
813.4082	11139.0985	136819.094	244.241264	4868.144811
766.0240	10373.0746	125679.995	235.590682	4623.903547
720.8818	9652.1928	115306.921	226.925895	4388.312865
677.6255	8974.5672	105654.728	217.997309	4161.386970
636.4677	8338.0995	96680.161	209.107375	3943.389661
597.4477	7740.6518	88342.061	200.395363	3734.282286
560.7007	7179.9511	80601.410	192.098209	3533.886923
526.0986	6653.8525	73421.458	184.196157	3341.788714
493.6265	6160.2260	66767.606	176.776389	3157.592557
463.1550	5697.0710	60607.380	169.810893	2980.816168
434.6585	5262.4125	54910.309	163.369372	2811.005275
408.1919	4854.2206	49647.896	157.600846	2647.635903
383.4348	4470.7858	44793.676	152.281418	2490.035057
360.2760	4110.5099	40322.890	147.381399	2337.753639
338.2160	3772.2939	36212.380	142.477425	2190.372240

TABLE XV.

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 5 per Cent.)

Age.	D.	N.	S.	M.	R.
53	317.2140	3455.0798	32440.086	137.580984	2047.8
54	297.2301	3157.8498	28985.006	132.702479	1910.3
55	278.2934	2879.5563	25827.157	127.919631	1777.6
56	260.2910	2619.2653	22947.600	123.169319	1649.6
57	243.1862	2376.0791	20328.335	118.459290	1526.5
58	226.7660	2149.3131	17952.256	113.619411	1408.0
59	210.7399	1938.5731	15802.943	108.391667	1294.4
60	195.0299	1743.5432	13864.370	102.716902	1186.0
61	179.5225	1564.0208	12120.827	96.496585	1083.3
62	164.8554	1399.1654	10556.806	90.378240	986.83
63	151.1319	1248.0334	9157.6404	84.504998	896.46
64	138.4297	1109.6037	7909.6069	78.999522	811.95
65	126.5945	983.0093	6800.0032	73.756212	732.95
66	115.6125	867.3968	5816.9939	68.802532	659.19
67	105.4274	761.9694	4949.5971	64.122788	590.39
68	95.95014	666.0192	4187.6278	59.665889	526.27
69	87.13644	578.8828	3521.6085	55.421223	466.60
70	78.91168	499.9711	2942.7257	51.345819	411.18
71	71.27263	428.6985	2442.7546	47.464482	359.84
72	63.88407	364.8144	2014.0562	43.469865	312.37
73	56.69689	308.1175	1649.2417	39.324775	268.90
74	49.77894	258.3386	1341.1242	35.106679	229.58
75	43.13377	215.2048	1082.7856	30.831930	194.47
76	37.15574	178.0491	867.58083	26.907892	163.64
77	31.74266	146.3064	689.53176	23.264142	136.73
78	26.98333	119.32308	543.22535	20.016354	113.47
79	22.90187	96.42121	423.90227	17.219825	93.45
80	19.22866	77.19255	327.48106	14.637172	76.23
81	16.08393	61.10861	250.28852	12.408096	61.59
82	13.26831	47.84031	189.17991	10.358372	49.19
83	10.85866	36.98165	141.33960	8.580550	38.83
84	8.781214	28.20043	104.35796	7.020183	30.25
85	7.035090	21.16534	76.15752	5.692211	23.23
86	5.525687	15.63966	54.99218	4.517814	17.53
87	4.244462	11.39519	39.35253	3.499717	13.02
88	3.168324	8.226869	27.95733	2.625696	9.52
89	2.354133	5.872736	19.73047	1.962377	6.89
90	1.758941	4.113795	13.85773	1.479298	4.93
91	1.238691	2.875104	9.743934	1.042796	3.45
92	.8426475	2.032457	6.868830	.705737	2.41
93	.5778151	1.454642	4.836373	.481032	1.70
94	.4076296	1.047012	3.381732	.338361	1.22
95	.2911641	.7558478	2.334720	.241306	.88
96	.2125961	.5432517	1.578872	.176603	.64
97	.1584567	.3847950	1.035620	.132588	.46
98	.1173753	.2674197	.6508254	.099052	.33
99	.0878318	.1795879	.3834057	.075098	.23
100	.0684404	.1111474	.2038179	.059889	.16
101	.0506966	.0604509	.0926704	.045404	.10
102	.0344875	.0259634	.0322196	.031609	.05
103	.0197071	.0062562	.0062562	.018471	.02
104	.0062562			.005958	.00

TABLE XVI.

Preparatory Table for finding the Values of Annuities, Assurances, &c.
(Carlisle 6 per Cent.)

D.	N.	S.	M.	R.
10000.0000	104397.1220	1516505.181	3524.691199	22081.897273
7982.0755	96415.0465	1412108.059	2072.804399	18557.206074
6923.2823	89491.7642	1315693.012	1465.826827	16484.401675
6107.3906	83384.3735	1226201.248	1041.819091	15018.574848
5543.0714	77841.3021	1142816.874	823.201241	13976.755757
5079.1138	72762.1884	1064975.572	673.002349	13153.554516
4706.3166	68055.8718	992213.384	587.702123	12480.552167
4385.3866	63670.4852	924157.512	533.167440	11892.850044
4100.7673	59569.7180	860487.027	496.777522	11359.682604
3843.1967	55726.5213	800917.309	471.325888	10862.905082
3607.2303	52119.2910	745190.788	452.898860	10391.579194
3387.7706	48731.5204	693071.497	437.622022	9938.680334
3180.6039	45550.9165	644339.976	422.215972	9501.058312
2985.5669	42565.3496	598789.060	407.213123	9078.842340
2801.9766	39763.3730	556223.710	392.617191	8671.629217
2628.7699	37134.6031	516460.337	378.012914	8279.012026
2464.6194	34669.9838	479325.734	362.660709	7900.999112
2309.5153	32360.4685	444655.750	347.063403	7538.338403
2163.7232	30196.7452	412295.282	331.998620	7191.275000
2027.0363	28169.7089	382098.537	317.786561	6859.276380
1898.8908	26270.8181	353928.828	304.378958	6541.489819
1778.7577	24492.0604	327658.010	291.730276	6237.110861
1666.4181	22825.6423	303165.949	280.075062	5945.380585
1561.0971	21264.5452	280340.307	269.079577	5665.305523
1462.3600	19802.1852	259075.762	258.706478	5396.225946
1369.7989	18432.3863	239273.576	248.920535	5137.519468
1282.8113	17149.5750	220841.190	239.468704	4888.598933
1201.2825	15948.2925	203691.615	230.551882	4649.130229
1124.4820	14823.8104	187743.323	221.748526	4418.578347
1051.6043	13772.2061	172919.512	212.520689	4196.829821
982.3294	12789.8768	159147.306	202.770522	3984.309132
917.3633	11872.5135	146357.429	193.407996	3781.538610
856.6045	11015.9090	134484.916	184.575424	3588.130614
799.9310	10215.9780	123469.007	176.388996	3403.555190
747.0668	9468.9112	113253.029	168.803862	3227.166194
697.6242	8771.2871	103784.118	161.648075	3058.362332
651.3853	8119.9018	95012.831	154.897333	2896.714257
608.0301	7511.8717	86892.929	148.412915	2741.816924
567.3866	6944.4851	79381.057	142.186300	2593.404009
529.2932	6415.1920	72436.572	136.209080	2451.217709
493.4026	5921.7894	66021.380	130.278526	2315.008629
459.4207	5462.3686	60099.591	124.225069	2184.730103
427.4454	5034.9233	54637.222	118.254678	2060.505034
397.4546	4637.4687	49602.299	112.458975	1942.250356
369.4896	4267.9791	44964.830	106.991330	1829.791381
343.4169	3924.5622	40696.851	101.833175	1722.800051
319.1806	3605.3816	36772.289	97.035528	1620.966876
296.6523	3308.7293	33166.907	92.574105	1523.931348
275.7738	3032.9556	29858.178	88.487212	1431.357243
256.5385	2776.4170	26825.222	84.861835	1342.870031
238.7059	2537.7111	24048.805	81.550245	1258.008196
222.1726	2315.5385	21511.094	78.528534	1176.457951
206.6011	2108.9374	19195.556	75.532914	1097.929417

Preparatory Table for finding the Values of Annuities, Assurances,
(Carlisle 6 per Cent.)

Age.	D.	N.	S.	M.	
53	191.9440	1916.9934	17086.618	72.570113	102
54	178.1551	1738.8383	15169.625	69.646013	94
55	165.2311	1573.6072	13430.786	66.806294	88
56	153.0846	1420.5226	11857.179	64.012500	81
57	141.6755	1278.8472	10436.657	61.268531	74
58	130.8631	1147.9841	9157.809	58.475513	68
59	120.4674	1027.5167	8009.825	55.487125	62
60	110.4351	917.0816	6982.309	52.273805	57
61	100.6951	816.3865	6065.227	48.784796	52
62	915.9590	724.7906	5248.841	45.385360	47
63	83.17877	641.6118	4524.050	42.152892	42
64	75.46905	566.1428	3882.438	39.151418	38
65	68.36567	497.7771	3316.295	36.319838	34
66	61.84597	435.9312	2818.518	33.669907	31
67	55.86549	380.0657	2382.587	31.190133	27
68	50.36386	329.7018	2002.521	28.850723	24
69	45.30611	284.3957	1672.820	26.643733	21
70	40.64262	243.7531	1388.424	24.544740	18
71	36.36188	207.3912	1144.671	22.564558	16
72	32.28494	175.1063	937.2796	20.545808	14
73	28.38244	146.7238	762.1734	18.470777	12
74	24.68424	122.0396	615.4496	16.379120	10
75	21.18727	100.8523	493.4100	14.279367	8
76	18.07870	82.77360	392.5577	12.370066	7
77	15.29916	67.47444	309.7841	10.613869	6
78	12.88259	54.59185	242.3096	9.063285	4
79	10.83084	43.76101	187.7178	7.740740	4
80	9.007899	34.75311	143.9568	6.530865	3
81	7.463638	27.28948	109.2037	5.496478	2
82	6.098976	21.19050	81.91419	4.554291	2
83	4.944259	16.24624	60.72369	3.744798	1
84	3.960617	12.28562	44.47745	3.041021	1
85	3.143124	9.142500	32.19182	2.447712	
86	2.445468	6.697032	23.04932	1.927967	
87	1.860721	4.836311	16.35229	1.481645	
88	1.375853	3.460458	11.51598	1.102099	
89	1.012645	2.447813	8.055520	.816768	
90	.749480	1.698333	5.607707	.610925	
91	.522824	1.175509	3.909374	.426692	
92	.352307	.823202	2.733865	.285769	
93	.239303	.583898	1.910663	.192707	
94	.167228	.416670	1.326765	.134177	
95	.118322	.298349	.910095	.094736	
96	.085579	.212770	.611746	.068690	
97	.063183	.149587	.398976	.051139	
98	.046361	.103226	.249389	.037893	
99	.034365	.068861	.146163	.028521	
100	.026525	.042336	.077302	.022627	
101	.019463	.022873	.034966	.017066	
102	.013115	.009758	.012093	.011820	
103	.007424	.002334	.002334	.006871	
104	.002334			.002202	

ng the preparatory Table for determining the Values of Annuities, &c., on
ingle Lives, according to the Carlisle Rate of Mortality. (7 per Cent.)

Ages.	D.	N.	S.
0	10000.00000	91758.33141	1193476.03436
1	7907.47664	83850.85477	1101717.70295
2	6794.47987	77056.37490	1017866.84818
3	5937.75078	71118.62412	940810.47328
4	5338.74068	65779.88344	869691.84916
5	4846.16706	60933.71638	803911.96572
6	4448.50065	56485.21573	742978.24934
7	4106.41178	52378.80395	686493.03361
8	3804.01147	48574.79248	634114.22966
9	3531.76177	45043.03071	585539.43718
10	3283.93643	41759.09429	540496.40647
11	3055.32179	38703.77250	498737.31218
12	2841.67654	35862.09596	460033.53968
13	2642.49361	33219.60235	424171.44372
14	2456.82222	30762.78013	390951.84137
15	2283.40993	28479.37020	360189.06124
16	2120.81732	26358.55288	331709.69104
17	1968.77613	24389.77675	305351.13819
18	1827.25556	22562.52119	280961.36144
19	1695.82558	20866.69561	258398.84025
20	1573.77171	19292.92390	237532.14464
21	1460.42965	17832.49425	218239.22074
22	1355.40759	16477.08666	200406.72649
23	1257.87624	15219.21042	183929.63983
24	1167.30514	14051.90528	168710.42941
25	1083.20092	12968.70436	154658.52413
26	1004.93287	11963.77149	141689.81977
27	932.26963	11031.50186	129726.04828
28	864.51191	10166.98995	118694.54642
29	800.92694	9366.06301	108527.55647
30	741.17328	8624.88973	99161.49346
31	685.68727	7939.20246	90536.60373
32	634.28897	7304.91349	82597.40127
33	586.78828	6718.12521	75292.48778
34	542.88817	6175.23704	68574.36257
35	502.22068	5673.01636	62399.12553
36	464.55069	5208.46567	56726.10917
37	429.57822	4778.88745	51517.64350
38	397.11692	4381.77053	46738.75605
39	366.99293	4014.77760	42356.98552
40	338.91042	3675.86718	38342.20792
41	312.61955	3363.24763	34668 34074
42	288.14313	3075.10450	31303.09311
43	265.42223	2809.68227	28227.98861
44	244.44097	2565.24130	25418.30634
45	225.06896	2340.17234	22853.06504
46	207.22994	2132.94240	20512.89270
47	190.80331	1942.13909	18379.95030
48	175.71677	1766.42232	16437.81121
49	161.93283	1604.48949	14671.38889
50	149.26830	1455.22119	13066.89940
51	137.63119	1317.59000	11611.67821

TABLE XVII.

Being the preparatory Table for determining the Values of Annuities,
Single Lives, according to the Carlisle Rate of Mortality. (7 per C

Ages.	D.	N.	S.
52	126.78892	1190.80108	10294.08821
53	116.69304	1074.10804	9103.28713
54	107.29781	966.81023	8029.17909
55	98.58402	868.22621	7062.36886
56	90.48332	777.74289	6194.14265
57	82.95712	694.78577	5416.39976
58	75.90989	618.87588	4721.61399
59	69.22653	549.64935	4102.73811
60	62.86841	486.78094	3553.08876
61	56.78789	429.99305	3066.30782
62	51.17355	378.81950	2636.31477
63	46.03668	332.78282	2257.49527
64	41.37926	291.40356	1924.71245
65	37.13416	254.26940	1633.30889
66	33.27891	220.99049	1379.03949
67	29.77991	191.21058	1158.04900
68	26.59630	164.61428	966.83842
69	23.70177	140.91251	802.22414
70	21.06337	119.84914	661.31163
71	18.66874	101.18040	541.46249
72	16.42066	84.75974	440.28209
73	14.30085	70.45889	355.52235
74	12.32123	58.13766	285.06346
75	10.47687	47.66079	226.92580
76	8.85617	38.80462	179.26501
77	7.42453	31.38009	140.46039
78	6.19336	25.18673	109.080301
79	5.15830	20.028431	83.893571
80	4.250018	15.778413	63.865140
81	3.488507	12.289906	48.086727
82	2.824020	9.465886	35.796821
83	2.267957	7.197929	26.330935
84	1.799774	5.398155	19.133006
85	1.414944	3.983211	13.734851
86	1.090588	2.892623	9.751640
87	.822060	2.070563	6.859017
88	.602165	1.468398	4.788454
89	.439059	1.029339	3.320056
90	.321920	.707419	2.290717
91	.222467	.4849516	1.5832973
92	.1485090	.3364426	1.0983457
93	.0999314	.2365112	.7619031
94	.0691808	.1673304	.5253919
95	.0484911	.1188393	.3580615
96	.0347445	.0840948	.2392222
97	.0254124	.0586824	.1551274
98	.0814722	.0402102	.0964450
99	.0135643	.02664589	.05623479
100	.01037205	.01627384	.02958890
101	.00753942	.00873442	.01331506
102	.00503300	.00370144	.00458064
103	.00282222	.00087920	.00087920

A Preparatory Table for finding the Values of Annuities, &c., by the Carlisle Table of Mortality. (8 per Cent.)

Age.	D.	N.	S.
0	10000.00000	81791.63708	961227.96771
1	7834.25929	73957.37779	879436.33063
2	6669.23867	67288.13912	805478.95284
3	5774.33571	61513.80341	738190.81372
4	5143.73888	56370.06453	676677.01031
5	4625.92401	51744.14052	620306.94578
6	4207.01243	47537.12809	568562.80526
7	3847.53570	43689.59239	521025.67717
8	3531.19739	40158.39500	477336.08478
9	3248.11655	36910.27845	437177.68978
10	2992.22994	33918.04851	400267.41133
11	2758.14566	31159.90285	366349.36282
12	2541.52806	28618.37479	335189.45997
13	2341.50036	26276.87443	306571.08518
14	2156.82069	24120.05374	280294.21075
15	1986.02277	22134.03097	256174.15701
16	1827.52622	20306.50475	234040.12604
17	1680.80259	18625.70216	213733.62129
18	1545.53800	17080.16416	195107.91913
19	1421.09007	15659.07409	178027.75497
20	1306.59860	14352.47549	162368.68088
21	1201.27132	13151.20417	148016.20539
22	1104.56276	12046.64141	134865.00122
23	1015.59001	11031.05140	122818.35981
24	933.73780	10097.31360	111787.30841
25	858.43922	9238.87438	101689.99481
26	789.03747	8449.83691	92451.12043
27	725.20724	7724.62967	84001.28352
28	666.27205	7058.35762	76276.65385
29	611.55221	6446.80541	69218.29623
30	560.68689	5886.11852	62771.49082
31	513.90964	5372.20888	56885.37230
32	470.98588	4901.22300	51513.16342
33	431.68022	4469.54278	46611.94042
34	395.68644	4073.85634	42142.39764
35	362.65640	3711.19994	38068.54130
36	332.34864	3378.85130	34357.34136
37	304.48302	3074.36828	30978.49006
38	278.86835	2795.49993	27904.12178
39	255.32807	2540.17186	25108.62185
40	233.60696	2306.56490	22568.44999
41	213.48974	2093.07516	20261.88509
42	194.95270	1898.12246	18168.80993
43	177.91734	1720.20512	16270.68747
44	162.33606	1557.86906	14550.48235
45	148.08689	1409.78217	12992.61329
46	135.08700	1274.69517	11582.83112
47	123.32730	1151.36787	10308.13595
48	112.43311	1038.93476	9156.76808
49	102.65405	936.28071	8117.83332
50	93.74945	842.53126	7181.55261
51	85.64026	756.89100	6339.02135

A Preparatory Table for finding the Values of Annuities, &c., by the Carlisle of Mortality. (8 per Cent.)

Age.	D.	N.	S.
52	78.16322	678.72778	5582.13035
53	71.23720	607.45458	4903.40257
54	64.92802	542.52656	4295.94799
55	59.10277	483.42379	3753.42143
56	53.74396	429.67983	3269.99764
57	48.81742	380.86241	2840.31781
58	44.25677	336.60564	2459.45540
59	39.98653	296.61911	2122.84976
60	35.97772	260.64139	1826.23065
61	32.19712	228.44427	1565.58926
62	28.74532	199.69895	1337.14499
63	25.62035	174.07860	1137.44604
64	22.81520	151.26340	963.36744
65	20.28500	130.97840	812.10404
66	18.01069	112.96771	681.12564
67	15.96780	96.99991	568.15793
68	14.12871	82.87120	471.15802
69	12.47449	70.39671	388.28682
70	10.98320	59.41351	317.89011
71	9.64442	49.76909	258.47660
72	8.40449	41.36460	208.70751
73	7.25177	34.11283	167.34291
74	6.19006	27.92277	133.23008
75	5.21474	22.70803	105.30731
76	4.36725	18.34078	82.59928
77	3.62736	14.71342	64.25850
78	2.99782	11.71560	49.54508
79	2.47370	9.241896	37.829482
80	2.019264	7.222632	28.587586
81	1.642110	5.580522	21.364954
82	1.317013	4.263509	15.784432
83	1.047892	3.215617	11.520923
84	.823875	2.391742	8.305306
85	.641712	1.750030	5.913564
86	.490029	1.260001	4.163534
87	.365954	.8940469	2.903534
88	.265582	.6284649	2.009487
89	.191851	.4366139	1.381022
90	.139365	.2972489	.9444077
91	.095418	.2018309	.6471588
92	.0631065	.1387244	.4453279
93	.0420714	.0966530	.3066035
94	.0288552	.0677978	.2099505
95	.0200385	.0477593	.1421527
96	.0142248	.0335345	.0943934
97	.0103079	.0232266	.0608589
98	.0074234	.0158032	.0376323
99	.0054006	.0104026	.0218291
100	.0040913	.0063113	.0114265
101	.0029464	.0033649	.0051152
102	.0019487	.0014162	.0017503
103	.0010821	.0003341	.0003341

paratory Table for finding the Values of Annuities, &c., by the Carlisle Table of Mortality. (9 per Cent.)

Age.	D.	N.	S.
0	10000.0000	73759.0568	789839.1337
1	7762.3853	65996.6715	716080.0769
2	6547.4286	59449.2429	650083.4054
3	5616.8626	53832.3802	590634.1625
4	4957.5596	48874.8206	536801.7823
5	4417.4837	44457.3370	487926.9617
6	3980.6807	40476.6563	443469.6247
7	3607.1438	36869.5125	402992.9685
8	3280.1980	33589.3145	366123.4560
9	2989.5576	30599.7569	332534.1415
10	2728.7738	27870.9831	301934.3846
11	2492.2238	25378.7593	274063.4015
12	2275.4223	23103.3371	248684.6422
13	2077.1056	21026.2314	225581.3051
14	1895.7264	19130.5050	204555.0737
15	1729.5897	17400.9154	185424.5687
16	1576.9566	15823.9588	168023.6533
17	1437.0441	14386.9147	152199.6945
18	1309.2733	13077.6414	137812.7798
19	1192.8052	11884.8362	124735.1384
20	1086.6441	10798.1921	112850.3022
21	989.8822	9808.3099	102052.1101
22	901.8412	8906.4688	92243.8002
23	821.5904	8084.8784	83337.3314
24	748.4437	7336.4347	75252.4530
25	681.7749	6654.6598	67916.0183
26	620.9067	6033.7531	61261.3586
27	565.4420	5468.3111	55227.6055
28	514.7245	4953.5866	49759.2944
29	468.1166	4485.4700	44805.7079
30	425.2440	4060.2260	40320.2379
31	386.1906	3674.0354	36260.0118
32	350.6874	3323.3480	32585.9764
33	318.4723	3004.8758	29262.6284
34	289.2397	2715.6361	26257.7526
35	262.6633	2452.9728	23542.1166
36	238.5038	2214.4690	21089.1438
37	216.5018	1997.9672	18874.6748
38	196.4694	1801.4978	16876.7076
39	178.2344	1623.2634	15075.2098
40	161.5757	1461.6876	13451.9465
41	146.3068	1315.3808	11990.2588
42	132.3775	1183.0034	10674.8780
43	119.7017	1063.3016	9491.8747
44	108.2167	955.0849	8428.5730
45	97.8122	857.2727	7473.4882
46	88.4071	768.8655	6616.2155
47	79.9058	688.9598	5847.3499
48	72.2375	616.7223	5158.3902
49	65.3494	551.3729	4541.6679
50	59.1332	492.2396	3990.2950
51	53.5227	438.7169	3498.0554

A Preparatory Table for finding the Values of Annuities, &c., by the Carlisl
of Mortality. (9 per Cent.)

Age.	D.	N.	S.
52	48.4016	390.3153	3059.3384
53	43.7301	346.5852	2669.0231
54	39.4715	307.1137	2322.4379
55	35.6006	271.5131	2015.3242
56	32.0757	239.4374	1743.8111
57	28.8681	210.5693	1504.3737
58	25.9311	184.6382	1293.8045
59	23.2141	161.4241	1109.1663
60	20.6952	140.7289	947.7422
61	18.3506	122.3783	807.0133
62	16.2329	106.1454	684.6350
63	14.3355	91.8099	578.4896
64	12.6488	79.1611	486.6797
65	11.1429	68.0182	407.5186
66	9.8028	58.2154	339.5004
67	8.6112	49.6043	281.2850
68	7.5495	42.0548	231.6807
69	6.6044	35.4504	189.6259
70	5.7615	29.6889	154.1755
71	5.0128	24.6761	124.4867
72	4.3283	20.3478	99.8106
73	3.7003	16.6475	79.4628
74	3.1296	13.5178	62.8153
75	2.6123	10.9055	49.2975
76	2.1677	8.7378	38.3920
77	1.7839	6.9539	29.6541
78	1.4608	5.4931	22.7002
79	1.1943	4.2987	17.20714
80	.96599	3.33276	12.90839
81	.77836	2.55440	9.57564
82	.61853	1.93586	7.02124
83	.48763	1.44823	5.08538
84	.37986	1.06837	3.63715
85	.29316	.77521	2.56877
86	.22182	.55339	1.79357
87	.16413	.38927	1.24017
88	.11802	.27125	.85091
89	.08447	.18677	.57966
90	.06080	.12597	.39289
91	.04125	.08473	.26692
92	.02703	.05770	.18219
93	.01785	.03984	.12449
94	.01213	.02771	.08465
95	.00835	.01936	.05694
96	.00587	.01349	.03758
97	.00422	.00927	.02409
98	.00301	.00627	.01482
99	.00217	.00410	.00855
100	.00163	.00247	.00445
101	.00116	.00131	.00198
102	.00076	.00055	.00067
103	.00042	.00013	.00013

TABLE XVIII.

A Preparatory Table for finding the Values of Annuities, &c., by the Carlisle Table of Mortality. (10 per Cent.)

Age.	D.	N.	S.
0	10000.0000	67162.7485	660369.1292
1	7691.8182	59470.9304	593206.3807
2	6428.9256	53042.0048	533735.4503
3	5465.0639	47576.9409	480693.4456
4	4779.7282	42797.2127	433116.5047
5	4220.4021	38576.8105	390319.2920
6	3768.4280	34808.3825	351742.4815
7	3383.7646	31424.6179	316934.0990
8	3049.0922	28375.5257	285509.4811
9	2753.6658	25621.8598	257133.9554
10	2490.6097	23131.2502	231512.0956
11	2254.0263	20877.2239	208380.8454
12	2039.2373	18837.9867	187503.6215
13	1844.5828	16993.4039	168665.6348
14	1668.2035	15325.2004	151672.2309
15	1508.1699	13817.0305	136347.0305
16	1362.5761	12454.4545	122530.0000
17	1230.3960	11224.0585	110075.5456
18	1110.8079	10113.2506	98851.4871
19	1002.7945	9110.4561	88738.2365
20	905.2397	8205.2164	79627.7805
21	817.1346	7388.0818	71422.5641
22	737.6901	6650.3918	64034.4823
23	665.9369	5984.4549	57384.0906
24	601.1331	5383.3218	51399.6357
25	542.6082	4840.7136	46016.3138
26	489.6722	4351.0414	41175.6002
27	441.8766	3909.1649	36824.5588
28	398.5856	3510.5793	32915.3939
29	359.1986	3151.3807	29404.8146
30	323.3348	2828.0459	26253.4339
31	290.9711	2537.0748	23425.3880
32	261.8196	2275.2552	20888.3133
33	235.6066	2039.6486	18613.0581
34	212.0350	1827.6136	16573.4095
35	190.8020	1636.8117	14745.7958
36	171.6771	1465.1346	13108.9841
37	154.4233	1310.7114	11643.8495
38	138.8609	1171.8505	10333.1382
39	124.8275	1047.0230	9161.2877
40	112.1318	934.8912	8114.2647
41	100.6123	834.2790	7179.3735
42	90.2057	744.0732	6345.0945
43	80.8266	663.2466	5601.0213
44	72.4072	590.8394	4937.7747
45	64.8507	525.9887	4346.9353
46	58.0822	467.9065	3820.9466
47	52.0196	415.8870	3353.0401
48	46.6000	369.2870	2937.1532
49	41.7733	327.5136	2567.8663
50	37.4561	290.0576	2240.3526
51	33.5941	256.4635	1950.2950

A Preparatory Table for finding the Values of Annuities, &c., by the Carlis of Mortality. (10 per Cent.)

Age.	D.	N.	S.
52	30.1036	226.3599	1693.8315
53	26.9509	199.4090	1467.4716
54	24.1052	175.3039	1268.0626
55	21.5435	153.7604	1092.7587
56	19.2340	134.5264	938.9984
57	17.1532	117.3731	804.4720
58	15.2680	102.1051	687.0989
59	13.5440	88.5611	584.9938
60	11.9646	76.5965	496.4326
61	10.5127	66.0839	419.8361
62	9.2149	56.8690	353.7522
63	8.0639	48.8051	296.8832
64	7.0504	41.7547	248.0781
65	6.1545	35.6002	206.3234
66	5.3651	30.2351	170.7232
67	4.6701	25.5650	140.4881
68	4.0571	21.5079	114.9231
69	3.5170	17.9909	93.4152
70	3.0402	14.9507	75.4243
71	2.6211	12.3296	60.4736
72	2.2426	10.0870	48.1440
73	1.8998	8.1872	38.0569
74	1.5922	6.5950	29.8697
75	1.3169	5.2781	23.2747
76	1.0829	4.1952	17.9966
77	.8830	3.3122	13.8014
78	.7165	2.59567	10.48920
79	.5805	2.01517	7.89353
80	.46525	1.54992	5.87836
81	.37147	1.17845	4.32844
82	.29251	.88595	3.14999
83	.22850	.65744	2.26404
84	.17639	.48105	1.60660
85	.13489	.34616	1.12555
86	.10113	.24502	.77939
87	.07415	.17087	.53437
88	.05284	.11804	.36350
89	.03747	.08056	.24546
90	.02673	.05383	.16490
91	.01797	.03587	.11107
92	.01167	.02420	.07520
93	.00764	.01657	.05100
94	.00514	.01142	.03444
95	.00351	.00792	.02301
96	.00244	.00547	.01510
97	.00174	.00374	.00962
98	.00123	.00251	.00589
99	.00088	.00163	.00338
100	.00065	.00098	.00175
101	.00046	.00051	.00078
102	.00030	.00021	.00026
103	.00016	.00005	.00005

Values of Annuities on Single Lives according to the Carlisle Table of Mortality.

Age.	3 per cent.	3½ per cent.	4 per cent.	4½ per cent.	5 per cent.
0	17.320	15.67193	14.28164	13.09841	12.083
1	20.085	18.17084	16.55455	15.17757	13.995
2	21.501	19.45565	17.72616	16.25108	14.983
3	22.683	20.53459	18.71508	17.16139	15.824
4	23.285	21.09152	19.23133	17.64095	16.271
5	23.693	21.47527	19.59203	17.97995	16.590
6	23.846	21.62976	19.74502	18.12959	16.735
7	23.867	21.66519	19.79019	18.18101	16.790
8	23.801	21.62246	19.76443	18.16776	16.786
9	23.677	21.52745	19.69114	18.11104	16.742
10	23.512	21.39473	19.58339	18.02272	16.669
11	23.327	21.24340	19.45857	17.91867	16.581
12	23.143	21.09342	19.33493	17.81571	16.494
13	22.957	20.94140	19.20937	17.71097	16.406
14	22.769	20.78725	19.08182	17.60437	16.316
15	22.582	20.63433	18.95584	17.49877	16.227
16	22.404	20.48956	18.83636	17.40012	16.144
17	22.232	20.34992	18.72111	17.30593	16.066
18	22.058	20.20881	18.60656	17.21061	15.987
19	21.879	20.06277	18.48649	17.11118	15.904
20	21.694	19.91158	18.36170	17.00744	15.817
21	21.504	19.75503	18.23196	16.89916	15.726
22	21.304	19.58946	18.09386	16.78313	15.628
23	21.098	19.41790	17.95016	16.66190	15.525
24	20.885	19.24009	17.80058	16.53519	15.417
25	20.665	19.05575	17.64486	16.40273	15.303
26	20.442	18.86802	17.48586	16.26715	15.187
27	20.212	18.67335	17.32023	16.12535	15.065
28	19.981	18.47823	17.15412	15.98291	14.942
29	19.761	18.29279	16.99683	15.84870	14.827
30	19.556	18.12096	16.85215	15.72628	14.723
31	19.348	17.94660	16.70511	15.60169	14.617
32	19.134	17.76626	16.55246	15.47187	14.506
33	18.910	17.57627	16.39072	15.33357	14.397
34	18.675	17.37613	16.21943	15.18627	14.260
35	18.433	17,16877	16.04123	15.03243	14.127
36	18.183	16.95384	15.85577	14.87169	13.987
37	17.928	16.73436	15.66586	14.70666	13.843
38	17.669	16.51013	15.47129	14.53712	13.695
39	17.405	16.28096	15.27184	14.36284	13.542
40	17.143	16.05334	15.07363	14.18957	13.390
41	16.890	15.83413	14.88314	14.02348	13.245
42	16.640	15.61723	14.69466	13.85923	13.101
43	16.389	15.39954	14.50529	13.69409	12.957
44	16.130	15.17437	14.30874	13.52208	12.806
45	15.863	14.94138	14.10460	13.34281	12.648
46	15.585	14.69677	13.88928	13.15283	12.480
47	15.294	14.43992	13.66208	12.95141	12.301
48	14.986	14.16680	13.41914	12.73480	12.107
49	14.654	13.86985	13.15312	12.49593	11.892
50	14.303	13.55445	12.86902	12.23941	11.660
51	13.932	13.21966	12.56581	11.96414	11.410

TABLE XIX.

Values of Annuities on Single Lives according to the Carlisle Table of Mortality.

Age.	3 per cent.	3½ per cent.	4 per cent.	4½ per cent.	5 per cent.
52	13.558	12.88072	12.25793	11.68380	11.154
53	13.180	12.53734	11.94503	11.39804	10.892
54	12.798	12.18913	11.62673	11.10645	10.624
55	12.408	11.83257	11.29961	10.80571	10.347
56	12.014	11.47021	10.96607	10.49804	10.063
57	11.614	11.10160	10.62559	10.18293	9.771
58	11.218	10.73539	10.28647	9.86828	9.478
59	10.841	10.38676	9.96331	9.56817	9.199
60	10.491	10.06309	9.66333	9.28966	8.940
61	10.180	9.77619	9.39809	9.04406	8.712
62	9.875	9.49388	9.13676	8.80180	8.487
63	9.567	9.20803	8.87150	8.55533	8.258
64	9.246	8.90934	8.59330	8.29589	8.016
65	8.917	8.60309	8.30719	8.02826	7.765
66	8.578	8.28572	8.00966	7.74900	7.503
67	8.228	7.95638	7.69980	7.45715	7.227
68	7.869	7.61735	7.37976	7.15469	6.941
69	7.499	7.26802	7.04881	6.84087	6.643
70	7.123	6.91089	6.70936	6.51790	6.336
71	6.737	6.54230	6.35773	6.18213	6.015
72	6.373	6.19468	6.02548	5.86428	5.711
73	6.044	5.88024	5.72465	5.57620	5.435
74	5.752	5.60175	5.45812	5.32090	5.190
75	5.512	5.37241	5.23901	5.11140	4.989
76	5.277	5.14769	5.02399	4.90552	4.792
77	5.059	4.93944	4.82473	4.71472	4.609
78	4.838	4.72765	4.62166	4.51989	4.422
79	4.592	4.49061	4.39345	4.30004	4.210
80	4.365	4.27204	4.18289	4.09708	4.015
81	4.119	4.03434	3.95309	3.87482	3.799
82	3.898	3.82060	3.74634	3.67472	3.606
83	3.672	3.60173	3.53409	3.46879	3.406
84	3.454	3.39020	3.32856	3.26900	3.211
85	3.229	3.17120	3.11515	3.06096	3.009
86	3.033	2.97977	2.92831	2.87853	2.830
87	2.873	2.82383	2.77593	2.72959	2.685
88	2.776	2.72891	2.68337	2.63929	2.597
89	2.665	2.62025	2.57704	2.53519	2.495
90	2.499	2.45680	2.41621	2.37689	2.339
91	2.481	2.43882	2.39835	2.35912	2.321
92	2.577	2.53384	2.49199	2.45139	2.412
93	2.687	2.64240	2.59955	2.55792	2.518
94	2.736	2.69209	2.64976	2.60859	2.569
95	2.757	2.71509	2.67433	2.63463	2.596
96	2.704	2.66537	2.62779	2.59112	2.555
97	2.559	2.52495	2.49204	2.45986	2.428
98	2.388	2.35999	2.33222	2.30500	2.278
99	2.131	2.10875	2.08700	2.06565	2.045
100	1.683	1.66757	1.65282	1.63829	1.624
101	1.228	1.21906	1.21005	1.20117	1.192
102	0.771	0.76641	0.76183	0.75731	0.753
103	0.324	0.32206	0.32051	0.31898	0.317

f Annuities on Single Lives according to the Carlisle Table of Mortality.

6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
10.439	9.177	8.178		6.716
12.078	10.605	9.439	8.502	7.732
12.925	11.342	10.088	9.080	8.251
13.652	11.978	10.651	9.584	8.705
14.042	12.322	10.957	9.858	8.954
14.325	12.574	11.184	10.064	9.141
14.460	12.698	11.298	10.168	9.237
14.518	12.756	11.354	10.221	9.287
14.526	12.770	11.371	10.240	9.306
14.500	12.754	11.362	10.236	9.304
14.448	12.717	11.334	10.214	9.286
14.384	12.669	11.296	10.183	9.261
14.321	12.621	11.259	10.153	9.238
14.257	12.572	11.221	10.123	9.213
14.191	12.522	11.182	10.091	9.187
14.126	12.473	11.144	10.061	9.161
14.067	12.429	11.111	10.034	9.140
14.012	12.389	11.081	10.011	9.122
13.956	12.348	11.051	9.988	9.104
13.897	12.305	11.019	9.963	9.085
13.835	12.259	10.985	9.937	9.064
13.769	12.210	10.948	9.909	9.041
13.697	12.156	10.906	9.876	9.015
13.621	12.098	10.861	9.841	8.987
13.541	12.037	10.813	9.802	8.955
13.456	11.972	10.762	9.761	8.921
13.368	11.904	10.709	9.718	8.886
13.275	11.832	10.652	9.671	8.847
13.182	11.759	10.594	9.624	8.808
13.096	11.693	10.542	9.582	8.773
13.020	11.636	10.498	9.548	8.747
12.942	11.578	10.454	9.514	8.719
12.860	11.516	10.407	9.476	8.690
12.771	11.448	10.355	9.435	8.657
12.675	11.374	10.297	9.389	8.619
12.573	11.295	10.235	9.339	8.578
12.465	11.211	10.168	9.285	8.534
12.354	11.124	10.098	9.228	8.488
12.239	11.033	10.026	9.169	8.439
12.120	10.939	9.950	9.107	8.388
12.002	10.845	9.875	9.046	8.337
11.890	10.757	9.805	8.991	8.292
11.779	10.671	9.737	8.937	8.249
11.668	10.585	9.669	8.883	8.206
11.551	10.494	9.597	8.826	8.160
11.428	10.397	9.520	8.764	8.111
11.296	10.292	9.436	8.697	8.056
11.154	10.178	9.344	8.622	7.995
10.998	10.052	9.241	8.537	7.925
10.823	9.908	9.121	8.437	7.840
10.631	9.749	8.987	8.324	7.744
10.422	9.573	8.838	8.197	7.634

TABLE XIX.

Values of Annuities on Single Lives according to the Carlisle Table of Mortality.

Age.	6 per cent.	7 per cent.	8 per cent.	9 per cent.	10 per cent.
52	10.208	9.392	8.684	8.064	7.519
53	9.988	9.205	8.523	7.926	7.399
54	9.761	9.011	8.356	7.781	7.272
55	9.524	8.807	8.179	7.627	7.137
56	9.280	8.595	7.995	7.465	6.994
57	9.027	8.375	7.802	7.294	6.843
58	8.772	8.153	7.606	7.120	6.687
59	8.529	7.940	7.418	6.954	6.539
60	8.304	7.743	7.245	6.800	6.402
61	8.108	7.572	7.095	6.669	6.285
62	7.913	7.403	6.947	6.539	6.171
63	7.714	7.229	6.795	6.404	6.052
64	7.502	7.042	6.630	6.258	5.922
65	7.281	6.847	6.457	6.104	5.784
66	7.049	6.641	6.272	5.938	5.635
67	6.803	6.421	6.075	5.760	5.474
68	6.546	6.189	5.866	5.570	5.301
69	6.277	5.945	5.643	5.368	5.115
70	5.998	5.690	5.410	5.153	4.918
71	5.704	5.420	5.160	4.923	4.704
72	5.424	5.162	4.922	4.701	4.498
73	5.170	4.927	4.704	4.499	4.309
74	4.944	4.719	4.511	4.319	4.142
75	4.760	4.549	4.355	4.175	4.008
76	4.579	4.382	4.200	4.031	3.874
77	4.410	4.227	4.056	3.898	3.751
78	4.238	4.067	3.908	3.760	3.623
79	4.040	3.883	3.736	3.599	3.471
80	3.858	3.713	3.577	3.450	3.331
81	3.656	3.523	3.398	3.282	3.172
82	3.474	3.352	3.237	3.130	3.029
83	3.286	3.174	3.069	2.970	2.877
84	3.102	2.999	2.903	2.813	2.728
85	2.909	2.815	2.727	2.644	2.567
86	2.739	2.652	2.571	2.495	2.423
87	2.599	2.519	2.443	2.372	2.304
88	2.515	2.439	2.366	2.299	2.234
89	2.417	2.344	2.276	2.211	2.150
90	2.266	2.198	2.133	2.072	2.015
91	2.248	2.180	2.115	2.054	1.997
92	2.337	2.266	2.198	2.135	2.075
93	2.440	2.367	2.297	2.232	2.170
94	2.492	2.419	2.350	2.284	2.221
95	2.522	2.451	2.383	2.319	2.258
96	2.486	2.420	2.358	2.298	2.239
97	2.368	2.309	2.253	2.199	2.150
98	2.227	2.177	2.129	2.083	2.039
99	2.004	1.964	1.926	1.889	1.856
100	1.596	1.569	1.543	1.517	1.493
101	1.175	1.159	1.142	1.127	1.112
102	0.744	0.735	0.727	.719	.713
103	0.314	0.312	0.309	.305	.304

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

er Age 0 Years.		Older Age One Year.	
ge.	Value.	Age.	Value.
0	10.480	1	14.079
		0	12.144

r Age Two Years.		Older Age Three Years.	
ge.	Value.	Age.	Value.
2	16.155	3	18.030
1	15.079	2	17.066
0	13.002	1	15.927
		0	13.730

Age Four Years.		Older Age Five Years.	
ge.	Value.	Age.	Value.
4	19.066	5	19.815
3	18.540	4	19.436
2	17.547	3	18.900
1	16.374	2	17.886
0	14.113	1	16.689
		0	14.384

r Age Six Years.			Older Age Seven Years.			
alue.	Age.	Value.	Age.	Value.	Age.	Value.
.156	2	18.036	7	20.281	3	19.113
.985	1	16.828	6	20.218	2	18.057
.601	0	14.503	5	20.044	1	16.874
.058			4	19.658	0	14.542

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Eight Years.				Older Age Nine Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	20.261	3	19.100	9	20.146	4	19.584
7	20.270	2	18.072	8	20.203	3	19.038
6	20.206	1	16.860	7	20.211	2	18.014
5	20.032	0	14.530	6	20.146	1	16.806
4	19.645			5	19.970	0	14.483

Older Age Ten Years.				Older Age Eleven Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
10	19.963	4	19.487	11	19.748	5	19.758
9	20.054	3	18.944	10	19.855	4	19.373
8	20.109	2	17.924	9	19.941	3	18.832
7	20.115	1	16.722	8	19.997	2	17.818
6	20.049	0	14.412	7	20.002	1	16.623
5	19.874			6	19.935	0	14.325

Older Age Twelve Years.				Older Age Thirteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
12	19.538	5	19.644	13	19.327	6	19.703
11	19.642	4	19.260	12	19.432	5	19.527
10	19.747	3	18.721	11	19.534	4	19.144
9	19.834	2	17.713	10	19.636	3	18.609
8	19.885	1	16.524	9	19.721	2	17.605
7	19.889	0	14.240	8	19.771	1	16.423
6	19.820			7	19.772	0	14.153

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Fourteen Years.				Older Age Fifteen Years.			
	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	19.115	6	19.554	15	18.908	7	19.536
	19.220	5	19.407	14	19.010	6	19.465
	19.322	4	19.027	13	19.113	5	19.289
	19.422	3	18.493	12	19.213	4	18.909
	19.523	2	17.494	11	19.311	3	18.377
	19.606	1	16.319	10	19.410	2	17.384
	19.653	0	14.065	9	19.490	1	16.217
	19.654			8	19.537	0	13.975

Older Age Sixteen Years.				Older Age Seventeen Years.			
	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	18.719	7	19.425	17	18.542	8	19.321
	18.812	6	19.354	16	18.629	7	19.319
	18.912	5	19.177	15	18.720	6	19.246
	19.013	4	18.797	14	18.819	5	19.068
	19.111	3	18.268	13	18.917	4	18.690
	19.208	2	17.281	12	19.014	3	18.164
	19.303	1	16.119	11	19.107	2	17.180
	19.382	0	13.894	10	19.201	1	16.027
	19.427			9	19.278	0	13.813

Older Age Eighteen Years.				Older Age Nineteen Years.			
	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	18.365	8	19.215	19	18.182	9	19.062
	18.452	7	19.210	18	18.272	8	19.102
	18.537	6	19.136	17	18.357	7	19.095
	18.626	5	18.958	16	18.440	6	19.020
	18.723	4	18.582	15	18.527	5	18.843
	18.820	3	18.056	14	18.622	4	18.467
	18.913	2	17.080	13	18.716	3	17.946
	19.005	1	15.932	12	18.808	2	16.974
	19.097	0	13.731	11	18.897	1	15.833
	19.172			10	18.987	0	13.647

Value of £1 per Annum during the joint Continuance of
(Carlisle 3 per Cent.)

Older Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	A
20	17.993	14	18.514	8	18.982	
19	18.086	13	18.607	7	18.975	
18	18.174	12	18.696	6	18.900	
17	18.257	11	18.784	5	18.722	
16	18.338	10	18.873	4	18.349	
15	18.423	9	18.945	3	17.829	

Older Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	A
21	17.797	15	18.312	9	18.821	
20	17.893	14	18.402	8	18.858	
19	17.984	13	18.492	7	18.849	
18	18.069	12	18.579	6	18.773	
17	18.150	11	18.666	5	18.596	
16	18.230	10	18.752	4	18.224	

Older Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	A
22	17.588	16	18.112	10	18.621	
21	17.691	15	18.192	9	18.689	
20	17.785	14	18.280	8	18.724	
19	17.874	13	18.367	7	18.714	
18	17.957	12	18.454	6	18.638	
17	18.036	11	18.538	5	18.461	

Older Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	A
23	17.372	16	17.988	9	18.550	
22	17.478	15	18.066	8	18.583	
21	17.579	14	18.151	7	18.573	
20	17.670	13	18.238	6	18.496	
19	17.756	12	18.320	5	18.319	
18	17.838	11	18.402	4	17.951	
17	17.913	10	18.484	3	17.441	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	17.148	17	17.785	10	18.340	3	17.298
23	17.258	16	17.857	9	18.404	2	16.359
22	17.362	15	17.933	8	18.436	1	15.260
21	17.460	14	18.017	7	18.424	0	13.155
20	17.549	13	18.099	6	18.347		
19	17.633	12	18.181	5	18.171		
18	17.711	11	18.260	4	17.805		

Older Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	16.916	18	17.577	11	18.111	4	17.652
24	17.030	17	17.649	10	18.189	3	17.149
23	17.138	16	17.719	9	18.252	2	16.218
22	17.239	15	17.794	8	18.282	1	15.129
21	17.334	14	17.873	7	18.269	0	13.042
20	17.421	13	17.955	6	18.191		
19	17.501	12	18.034	5	18.016		

Older Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	16.681	19	17.366	12	17.883	5	17.857
25	16.796	18	17.440	11	17.958	4	17.495
24	16.908	17	17.509	10	18.035	3	16.996
23	17.013	16	17.578	9	18.095	2	16.074
22	17.111	15	17.648	8	18.124	1	14.994
21	17.204	14	17.727	7	18.110	0	12.927
20	17.287	13	17.806	6	18.032		

Older Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	16.437	20	17.147	13	17.650	6	17.865
26	16.557	19	17.223	12	17.724	5	17.690
25	16.670	18	17.294	11	17.798	4	17.331
24	16.779	17	17.363	10	17.872	3	16.837
23	16.881	16	17.427	9	17.931	2	15.923
22	16.977	15	17.496	8	17.958	1	14.853
21	17.066	14	17.572	7	17.944	0	12.806

Value of £1 per Annum during the joint Continuance of Two Liv

(Carlisle 3 per Cent.)

Older Age Twenty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
28	16.196	20	17.005	12	17.565	4
27	16.315	19	17.079	11	17.636	3
26	16.432	18	17.149	10	17.708	2
25	16.542	17	17.212	9	17.765	1
24	16.647	16	17.275	8	17.791	0
23	16.747	15	17.313	7	17.775	
22	16.839	14	17.417	6	17.697	
21	16.926	13	17.491	5	17.523	

Older Age Twenty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
29	15.976	21	16.794	13	17.342	5
28	16.084	20	16.871	12	17.413	4
27	16.200	19	16.942	11	17.483	3
26	16.314	18	17.008	10	17.553	2
25	16.421	17	17.071	9	17.609	1
24	16.524	16	17.132	8	17.633	0
23	16.620	15	17.197	7	17.616	
22	16.710	14	17.269	6	17.537	

Older Age Thirty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
30	15.784	22	16.592	14	17.134	6
29	15.878	21	16.674	13	17.205	5
28	15.984	20	16.748	12	17.274	4
27	16.096	19	16.817	11	17.342	3
26	16.207	18	16.881	10	17.411	2
25	16.311	17	16.941	9	17.464	1
24	16.411	16	17.009	8	17.487	0
23	16.505	15	17.063	7	17.470	

Older Age Thirty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
31	15.591	23	16.386	15	16.927	7
30	15.685	22	16.471	14	16.995	6
29	15.777	21	16.550	13	17.064	5
28	15.879	20	16.621	12	17.131	4
27	15.989	19	16.688	11	17.197	3
26	16.097	18	16.750	10	17.264	2
25	16.198	17	16.809	9	17.316	1
24	16.295	16	16.865	8	17.338	0

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Thirty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
32	15.392	23	16.261	14	16.850	5	16.913
31	15.489	22	16.344	13	16.917	4	16.567
30	15.581	21	16.420	12	16.983	3	16.091
29	15.669	20	16.489	11	17.047	2	15.217
28	15.769	19	16.553	10	17.112	1	14.197
27	15.875	18	16.613	9	17.162	0	12.244
26	15.980	17	16.669	8	17.183		
25	16.078	16	16.724	7	17.164		
24	16.172	15	16.784	6	17.084		

Older Age Thirty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
33	15.180	24	16.040	15	16.630	6	16.918
32	15.283	23	16.126	14	16.694	5	16.748
31	15.378	22	16.205	13	16.760	4	16.404
30	15.466	21	16.279	12	16.824	3	15.933
29	15.552	20	16.346	11	16.886	2	15.068
28	15.648	19	16.408	10	16.949	1	14.058
27	15.751	18	16.466	9	16.998	0	12.125
26	15.853	17	16.520	8	17.018		
25	15.948	16	16.573	7	16.998		

Older Age Thirty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
34	14.954	25	15.808	16	16.411	7	16.821
33	15.064	24	15.897	15	16.466	6	16.741
32	15.165	23	15.979	14	16.529	5	16.573
31	15.256	22	16.056	13	16.592	4	16.231
30	15.342	21	16.128	12	16.654	3	15.766
29	15.424	20	16.192	11	16.715	2	14.909
28	15.517	19	16.252	10	16.776	1	13.910
27	15.617	18	16.308	9	16.824	0	11.999
26	15.716	17	16.360	8	16.842		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
35	14.720	26	15.570	17	16.192	8	16.
34	14.835	25	15.660	16	16.241	7	16.
33	14.942	24	15.745	15	16.295	6	16.
32	15.039	23	15.825	14	16.355	5	16.
31	15.127	22	15.900	13	16.417	4	16.
30	15.209	21	15.969	12	16.477	3	15.
29	15.288	20	16.031	11	16.536	2	14.
28	15.378	19	16.088	10	16.596	1	13.
27	15.475	18	16.142	9	16.642	0	11.

Older Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
36	14.477	26	15.417	16	16.063	6	16.
35	14.596	25	15.503	15	16.115	5	16.
34	14.707	24	15.586	14	16.173	4	15.
33	14.811	23	15.663	13	16.233	3	15.
32	14.905	22	15.735	12	16.292	2	14.
31	14.989	21	15.801	11	16.349	1	13.
30	15.068	20	15.861	10	16.407	0	11.
29	15.144	19	15.916	9	16.451		
28	15.230	18	15.968	8	16.468		
27	15.324	17	16.016	7	16.445		

Older Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
37	14.231	27	15.168	17	15.834	7	16.
36	14.352	26	15.257	16	15.880	6	16.
35	14.467	25	15.340	15	15.930	5	16.
34	14.574	24	15.420	14	15.987	4	15.
33	14.674	23	15.495	13	16.044	3	15.
32	14.764	22	15.564	12	16.101	2	14.
31	14.845	21	15.628	11	16.156	1	13.
30	14.921	20	15.685	10	16.213	0	11.
29	14.993	19	15.739	9	16.256		
28	15.077	18	15.788	8	16.271		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Thirty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
38	13.981	28	14.918	18	15.603	8	16.069
37	14.104	27	15 005	17	15.647	7	16.046
36	14.221	26	15.092	16	15.691	6	15.966
35	14.332	25	15.172	15	15.739	5	15.802
34	14.435	24	15.249	14	15.794	4	15.475
33	14.531	23	15.322	13	15.851	3	15.030
32	14.618	22	15.388	12	15.905	2	14.213
31	14.696	21	15.450	11	15.959	1	13.264
30	14.768	20	15.505	10	16.014	0	11.446
29	14.837	19	15.556	9	16.055		

Older Age Thirty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
39	13.727	29	14.675	19	15.367	9	15.849
38	13.853	28	14.752	18	15.412	8	15.862
37	13.971	27	14.837	17	15.455	7	15.838
36	14.083	26	14.920	16	15.497	6	15.759
35	14.191	25	11.998	15	15.543	5	15.596
34	14.290	24	15.073	14	15.597	4	15.273
33	14.382	23	15.141	13	15.651	3	14.833
32	14.465	22	15.205	12	15.704	2	14.028
31	14.540	21	15.265	11	15.756	1	13.091
30	14.608	20	15.318	10	15.809	0	11.298

Older Age Forty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
40	13.481	29	14.512	18	15.222	7	15.631
39	13.603	28	14.587	17	15.263	6	15.552
38	13.723	27	14.668	16	15.303	5	15.391
37	13.837	26	14.748	15	15.348	4	15.071
36	13.945	25	14.824	14	15.399	3	14.637
35	14.048	24	14.895	13	15.452	2	13.842
34	14.144	23	14.961	12	15.503	1	12.919
33	14.233	22	15.023	11	15.554	0	11.151
32	14.312	21	15.080	10	15.605		
31	14.383	20	15.131	9	15.644		
30	14.449	19	15.178	8	15.656		

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 3 per Cent.)

Older Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
41	13.254	30	14.295	19	14.997	8
40	13.366	29	14.356	18	15.038	7
39	13.483	28	14.427	17	15.077	6
38	13.598	27	14.505	16	15.116	5
37	13.708	26	14.584	15	15.159	4
36	13.812	25	14.655	14	15.209	3
35	13.912	24	14.724	13	15.260	2
34	14.003	23	14.788	12	15.310	1
33	14.088	22	14.848	11	15.358	0
32	14.164	21	14.903	10	15.409	
31	14.232	20	14.951	9	15.446	

Older Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
42	13.036	31	14.082	20	14.773	9
41	13.143	30	14.142	19	14.816	8
40	13.250	29	14.199	18	14.856	7
39	13.362	28	14.268	17	14.894	6
38	13.474	27	14.344	16	14.931	5
37	13.579	26	14.418	15	14.972	4
36	13.680	25	14.487	14	15.020	3
35	13.775	24	14.554	13	15.070	2
34	13.863	23	14.616	12	15.117	1
33	13.945	22	14.673	11	15.165	0
32	14.017	21	14.726	10	15.214	

Older Age Forty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
43	12.822	32	13.868	21	14.548	10
42	12.927	31	13.929	20	14.592	9
41	13.029	30	13.986	19	14.634	8
40	13.132	29	14.041	18	14.673	7
39	13.239	28	14.107	17	14.708	6
38	13.346	27	14.179	16	14.744	5
37	13.448	26	14.251	15	14.784	4
36	13.544	25	14.318	14	14.830	3
35	13.636	24	14.382	13	14.877	2
34	13.720	23	14.442	12	14.925	1
33	13.798	22	14.497	11	14.970	0

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	12.600	32	13.709	20	14.404	8	14.854
43	12.709	31	13.768	19	14.444	7	14.827
42	12.809	30	13.822	18	14.481	6	14.750
41	12.907	29	13.875	17	14.515	5	14.595
40	13.005	28	13.937	16	14.549	4	14.290
39	13.107	27	14.007	15	14.587	3	13.877
38	13.211	26	14.076	14	14.631	2	13.125
37	13.308	25	14.140	13	14.678	1	12.253
36	13.400	24	14.202	12	14.724	0	10.582
35	13.488	23	14.259	11	14.768		
34	13.569	22	14.312	10	14.813		
33	13.643	21	14.361	9	14.847		

Older Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	12.371	33	13.479	21	14.166	9	14.632
44	12.483	32	13.542	20	14.207	8	14.639
43	12.587	31	13.598	19	14.245	7	14.612
42	12.682	30	13.650	18	14.280	6	14.535
41	12.775	29	13.698	17	14.313	5	14.382
40	12.868	28	13.758	16	14.346	4	14.081
39	12.967	27	13.825	15	14.381	3	13.674
38	13.066	26	13.892	14	14.426	2	12.933
37	13.151	25	13.954	13	14.470	1	12.075
36	13.248	24	14.013	12	14.514	0	10.430
35	13.331	23	14.068	11	14.557		
34	13.409	22	14.119	10	14.601		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	12.128	34	13.236	22	13.914	10	14.376
45	12.247	33	13.303	21	13.959	9	14.406
44	12.354	32	13.363	20	13.998	8	14.412
43	12.452	31	13.416	19	14.035	7	14.385
42	12.543	30	13.463	18	14.068	6	14.309
41	12.630	29	13.510	17	14.099	5	14.156
40	12.720	28	13.567	16	14.129	4	13.860
39	12.814	27	13.632	15	14.166	3	13.460
38	12.909	26	13.696	14	14.207	2	12.731
37	12.998	25	13.755	13	14.250	1	11.888
36	13.082	24	13.812	12	14.292	0	10.270
35	13.162	23	13.865	11	14.334		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Forty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value
47	11.870	35	12.980	23	13.649	11	14.098
46	11.996	34	13.050	22	13.696	10	14.139
45	12.110	33	13.114	21	13.739	9	14.168
44	12.211	32	13.171	20	13.777	8	14.173
43	12.304	31	13.219	19	13.811	7	14.146
42	12.389	30	13.265	18	13.843	6	14.069
41	12.474	29	13.309	17	13.873	5	13.919
40	12.558	28	13.363	16	13.902	4	13.627
39	12.648	27	13.425	15	13.935	3	13.234
38	12.738	26	13.487	14	13.976	2	12.518
37	12.823	25	13.544	13	14.018	1	11.690
36	12.903	24	13.599	12	14.059	0	10.101

Older Age Forty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
48	11.591	35	12.780	22	13.461	9	13.912
47	11.728	34	12.846	21	13.503	8	13.917
46	11.848	33	12.908	20	13.538	7	13.888
45	11.956	32	12.960	19	13.571	6	13.813
44	12.052	31	13.007	18	13.602	5	13.666
43	12.139	30	13.049	17	13.630	4	13.379
42	12.221	29	13.091	16	13.658	3	12.993
41	12.300	28	13.143	15	13.690	2	12.290
40	12.380	27	13.202	14	13.729	1	11.479
39	12.465	26	13.261	13	13.769	0	9.922
38	12.550	25	13.316	12	13.807		
37	12.631	24	13.368	11	13.845		
36	12.708	23	13.417	10	13.885		

Older Age Forty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
49	11.279	36	12.488	23	13.160	10	13.606
48	11.432	35	12.556	22	13.203	9	13.633
47	11.562	34	12.620	21	13.242	8	13.636
46	11.676	33	12.676	20	13.276	7	13.608
45	11.778	32	12.726	19	13.307	6	13.533
44	11.868	31	12.770	18	13.336	5	13.388
43	11.951	30	12.810	17	13.363	4	13.107
42	12.027	29	12.849	16	13.389	3	12.729
41	12.102	28	12.898	15	13.420	2	12.042
40	12.177	27	12.955	14	13.457	1	11.249
39	12.257	26	13.012	13	13.495	0	9.725
38	12.339	25	13.064	12	13.532		
37	12.416	24	13.114	11	13.569		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	10.942	37	12.180	24	12.841	11	13.273
49	11.107	36	12.248	23	12.885	10	13.310
48	11.253	35	12.314	22	12.925	9	13.334
47	11.377	34	12.372	21	12.963	8	13.337
46	11.484	33	12.426	20	12.995	7	13.308
45	11.580	32	12.473	19	13.024	6	13.235
44	11.665	31	12.514	18	13.052	5	13.092
43	11.743	30	12.551	17	13.077	4	12.817
42	11.814	29	12.588	16	13.102	3	13.448
41	11.884	28	12.635	15	13.131	2	11.777
40	11.954	27	12.689	14	13.166	1	11.003
39	12.031	26	12.743	13	13.203	0	9.517
38	12.108	25	12.793	12	13.238		

Older Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	10.579	38	11.856	25	12.502	12	12.924
50	10.757	37	11.924	24	12.547	11	12.958
49	10.914	36	11.989	23	12.589	10	12.992
48	11.053	35	12.049	22	12.628	9	13.016
47	11.170	34	12.105	21	12.663	8	13.107
46	11.271	33	12.155	20	12.694	7	12.989
45	11.362	32	12.199	19	12.722	6	12.916
44	11.441	31	12.237	18	12.747	5	12.777
43	11.514	30	12.272	17	12.771	4	12.509
42	11.580	29	12.306	16	12.794	3	12.149
41	11.645	28	12.351	15	12.822	2	11.495
40	11.711	27	12.402	14	12 855	1	10.743
39	11.783	26	12.454	13	12.890	0	9.293

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	10.215	39	11.528	26	12.160	13	12.573
51	10.393	38	11.596	25	12.205	12	12.606
50	10.563	37	11.661	24	12.248	11	12.637
49	10.713	36	11.721	23	12.288	10	12.670
48	10.845	35	11.778	22	12.325	9	12.692
47	10.955	34	11.830	21	12.358	8	12.693
46	11.051	33	11.878	20	12.387	7	12.664
45	11.135	32	11.919	19	12.413	6	12.593
44	11.209	31	11.955	18	12.437	5	12.457
43	11.277	30	11.987	17	12.459	4	12.195
42	11.338	29	12.019	16	12.481	3	11.845
41	11.399	28	12.061	15	12.508	2	11.210
40	11.461	27	12.110	14	12.540	1	10.476
						0	9.066

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
53	9.849	42	11.089	31	11.665	20	12.075	9	1
52	10.028	41	11.145	30	11.696	19	12.099	8	1
51	10.198	40	11.202	29	11.725	18	12.122	7	1
50	10.360	39	11.265	28	11.765	17	12.142	6	1
49	10.503	38	11.330	27	11.812	16	12.163	5	1
48	10.628	37	11.390	26	11.859	15	12.188	4	11
47	10.732	36	11.446	25	11.902	14	12.219	3	11
46	10.821	35	11.500	24	11.943	13	12.251	2	10
45	10.900	34	11.549	23	11.981	12	12.281	1	10
44	10.969	33	11.594	22	12.016	11	12.311	0	8
43	11.031	32	11.632	21	12.048	10	12.343		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
54	9.480	43	10.778	32	11.338	21	11.731	10	12
53	9.660	42	10.830	31	11.369	20	11.756	9	12.
52	9.831	41	10.882	30	11.397	19	11.785	8	12.
51	9.994	40	10.936	29	11.425	18	11.801	7	12.
50	10.148	39	10.995	28	11.463	17	11.820	6	11.
49	10.284	38	11.055	27	11.507	16	11.839	5	11.
48	10.402	37	11.111	26	11.552	15	11.863	4	11.
47	10.499	36	11.164	25	11.593	14	11.892	3	11.
46	10.583	35	11.215	24	11.632	13	11.922	2	10.
45	10.656	34	11.261	23	11.668	12	11.951	1	9.
44	10.720	33	11.302	22	11.701	11	11.980	0	8.

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
55	9.103	43	10.513	31	11.063	19	11.450	7	11.
54	9.287	42	10.561	30	11.089	18	11.470	6	11.
53	9.459	41	10.608	29	11.115	17	11.488	5	11.
52	9.622	40	10.658	28	11.151	16	11.506	4	11.
51	9.777	39	10.713	27	11.193	15	11.528	3	10.
50	9.924	38	10.769	26	11.235	14	11.556	2	10.
49	10.052	37	10.822	25	11.274	13	11.584	1	9.
48	10.163	36	10.872	24	11.312	12	11.612	0	8.
47	10.254	35	10.919	23	11.346	11	11.639		
46	10.332	34	10.962	22	11.376	10	11.667		
45	10.400	33	11.001	21	11.405	9	11.686		
44	10.459	32	11.034	20	11.429	8	11.684		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Fifty-Six Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8.721	44	10.189	32	10.722	20	11.094	8	11.334
8.908	43	10.237	31	10.749	19	11.114	7	11.306
9.084	42	10.281	30	10.773	18	11.132	6	11.242
9.248	41	10.325	29	10.797	17	11.149	5	11.118
9.403	40	10.371	28	10.831	16	11.166	4	10.885
9.549	39	10.422	27	10.871	15	11.187	3	10.575
9.639	38	10.474	26	10.911	14	11.213	2	10.011
9.810	37	10.524	25	10.948	13	11.240	1	9.367
9.914	36	10.570	24	10.984	12	11.266	0	8.119
9.999	35	10.615	23	11.016	11	11.292		
10.071	34	10.655	22	11.045	10	11.318		
10.134	33	10.691	21	11.072	9	11.336		

Older Age Fifty-Seven Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8.334	45	9.858	33	10.373	21	10.731	9	10.979
8.523	44	9.908	32	10.402	20	10.751	8	10.976
8.701	43	9.952	31	10.427	19	10.770	7	10.950
8.869	42	9.992	30	10.449	18	10.787	6	10.885
9.025	41	10.032	29	10.472	17	10.803	5	10.766
9.172	40	10.074	28	10.504	16	10.819	4	10.541
9.311	39	10.122	27	10.541	15	10.838	3	10.241
9.442	38	10.171	26	10.580	14	10.863	2	9.697
9.556	37	10.216	25	10.615	13	10.888	1	9.075
9.654	36	10.260	24	10.648	12	10.913	0	7.869
9.733	35	10.302	23	10.678	11	10.937		
9.801	34	10.339	22	10.706	10	10.963		

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.954	46	9.527	34	10.023	22	10.367	10	10.608
57	8.140	45	9.579	33	10.055	21	10.391	9	10.623
56	8.321	44	9.625	32	10.082	20	10.410	8	10.621
55	8.490	43	9.665	31	10.105	19	10.428	7	10.593
54	8.650	42	9.701	30	10.126	18	10.444	6	10.531
53	8.797	41	9.737	29	10.146	17	10.458	5	10.416
52	8.937	40	9.776	28	10.176	16	10.473	4	10.198
51	9.068	39	9.820	27	10.212	15	10.491	3	9.909
50	9.193	38	9.865	26	10.249	14	10.514	2	9.383
49	9.300	37	9.909	25	10.281	13	10.538	1	8.784
48	9.392	36	9.949	24	10.313	12	10.562	0	7.621
47	9.465	35	9.988	23	10.342	11	10.584		

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 3 per Cent.)

Older Age Fifty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
59	7.605	47	9.207	35	9.688	23	10.020	11	10
58	7.776	46	9.264	34	9.721	22	10.045	10	10
57	7.953	45	9.312	33	9.751	21	10.067	9	10
56	8.125	44	9.353	32	9.776	20	10.085	8	10
55	8.287	43	9.389	31	9.797	19	10.101	7	10
54	8.439	42	9.422	30	9.816	18	10.116	6	10
53	8.579	41	9.455	29	9.836	17	10.129	5	10
52	8.711	40	9.490	28	9.864	16	10.143	4	9
51	8.835	39	9.531	27	9.898	15	10.160	3	9.
50	8.953	38	9.574	26	9.933	14	10.181	2	9
49	9.053	37	9.614	25	9.964	13	10.204	1	8
48	9.139	36	9.652	24	9.994	12	10.227	0	7.

Older Age Sixty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
60	7.295	47	8.967	34	9.440	21	9.765	8	9.
59	7.446	46	9.019	33	9.468	20	9.782	7	9.
58	7.610	45	9.063	32	9.492	19	9.798	6	9.
57	7.780	44	9.100	31	9.511	18	9.811	5	9.
56	7.944	43	9.132	30	9.529	17	9.823	4	9.
55	8.098	42	9.162	29	9.547	16	9.836	3	9.
54	8.243	41	9.192	28	9.574	15	9.852	2	8.
53	8.376	40	9.224	27	9.606	14	9.873	1	8.
52	8.501	39	9.263	26	9.639	13	9.894	0	7.
51	8.619	38	9.303	25	9.669	12	9.915		
50	8.729	37	9.340	24	9.697	11	9.936		
49	8.824	36	9.376	23	9.722	10	9.957		
48	8.904	35	9.410	22	9.745	9	9.970		

Older Age Sixty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
61	7.044	48	8.697	35	9.164	22	9.480	9	9.
60	7.166	47	8.756	34	9.193	21	9.499	8	9.
59	7.311	46	8.803	33	9.219	20	9.515	7	9.
58	7.468	45	8.843	32	9.241	19	9.529	6	9.
57	7.630	44	8.876	31	9.259	18	9.542	5	9.
56	7.788	43	8.906	30	9.276	17	9.553	4	9.
55	7.935	42	8.933	29	9.292	16	9.565	3	9.
54	8.073	41	8.960	28	9.318	15	9.580	2	8.
53	8.199	40	8.990	27	9.348	14	9.599	1	8.
52	8.318	39	9.026	26	9.380	13	9.620	0	6.
51	8.429	38	9.063	25	9.407	12	9.639		
50	8.534	37	9.098	24	9.434	11	9.659		
49	8.623	36	9.132	23	9.458	10	9.679		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Sixty-Two Years.

lue.	Age.	Value.	Age.	Value.	Age.	Value.
04	42	8.705	22	9.218	2	8.321
21	41	8.730	21	9.236	1	7.798
37	40	8.757	20	9.251	0	6.778
75	39	8.791	19	9.264		
25	38	8.826	18	9.276		
80	37	8.859	17	9.287		
31	36	8.890	16	9.297		
72	35	8.921	15	9.311		
02	34	8.948	14	9.330		
23	33	8.972	13	9.349		
35	32	8.993	12	9.368		
40	31	9.009	11	9.386		
39	30	9.025	10	9.405		
22	29	9.041	9	9.416		
92	28	9.064	8	9.412		
45	27	9.094	7	9.387		
88	26	9.123	6	9.331		
24	25	9.150	5	9.228		
54	24	9.175	4	9.035		
81	23	9.198	3	8.782		

Older Age Sixty-Three Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
63	43	8.450	23	8.933	3	8.522
80	42	8.471	22	8.952	2	8.076
91	41	8.494	21	8.969	1	7.572
01	40	8.519	20	8.983	0	6.584
32	39	8.550	19	8.995		
75	38	8.584	18	9.006		
24	37	8.615	17	9.015		
68	36	8.644	16	9.025		
01	35	8.672	15	9.038		
25	34	8.698	14	9.056		
39	33	8.721	13	9.074		
45	32	8.740	12	9.092		
44	31	8.755	11	9.109		
37	30	8.770	10	9.127		
15	29	8.784	9	9.138		
79	28	8.807	8	9.133		
28	27	8.835	7	9.108		
67	26	8.863	6	9.053		
00	25	8.888	5	8.954		
26	24	8.912	4	8.767		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Sixty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
64	6.308	44	8.183	24	8.635	4	8.
63	6.432	43	8.205	23	8.655	3	8.
62	6.542	42	8.224	22	8.673	2	7.
61	6.646	41	8.244	21	8.689	1	7.
60	6.750	40	8.267	20	8.701	0	6.
59	6.875	39	8.296	19	8.712		
58	7.011	38	8.327	18	8.722		
57	7.152	37	8.356	17	8.731		
56	7.289	36	8.384	16	8.740		
55	7.416	35	8.411	15	8.752		
54	7.533	34	8.434	14	8.769		
53	7.640	33	8.456	13	8.786		
52	7.740	32	8.473	12	8.803		
51	7.833	31	8.488	11	8.819		
50	7.920	30	8.501	10	8.836		
49	7.992	29	8.515	9	8.846		
48	8.051	28	8.536	8	8.841		
47	8.096	27	8.562	7	8.816		
46	8.131	26	8.589	6	8.762		
45	8.160	25	8.612	5	8.667		

Older Age Sixty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
65	6.047	45	7.910	25	8.329	5	8.3
64	6.174	44	7.931	24	8.350	4	8.
63	6.291	43	7.950	23	8.369	3	7.
62	6.394	42	7.967	22	8.385	2	7.
61	6.492	41	7.985	21	8.400	1	7.
60	6.589	40	8.006	20	8.411	0	6.
59	6.707	39	8.033	19	8.422		
58	6.836	38	8.062	18	8.430		
57	6.970	37	8.089	17	8.438		
56	7.100	36	8.115	16	8.447		
55	7.219	35	8.140	15	8.458		
54	7.330	34	8.162	14	8.474		
53	7.431	33	8.182	13	8.490		
52	7.524	32	8.198	12	8.506		
51	7.611	31	8.212	11	8.521		
50	7.691	30	8.224	10	8.537		
49	7.758	29	8.236	9	8.546		
48	7.813	28	8.256	8	8.541		
47	7.853	27	8.281	7	8.517		
46	7.884	26	8.306	6	8.465		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
66	5.774	46	7.624	26	8.012	6	8.156
65	5.906	45	7.647	25	8.033	5	8.066
64	6.026	44	7.666	24	8.053	4	7.899
63	6.135	43	7.682	23	8.070	3	7.681
62	6.232	42	7.697	22	8.086	2	7.284
61	6.323	41	7.713	21	8.099	1	6.838
60	6.414	40	7.732	20	8.110	0	5.958
59	6.525	39	7.757	19	8.119		
58	6.647	38	7.784	18	8.127		
57	6.774	37	7.810	17	8.134		
56	6.896	36	7.834	16	8.142		
55	7.009	35	7.857	15	8.152		
54	7.112	34	7.878	14	8.167		
53	7.206	33	7.896	13	8.182		
52	7.293	32	7.911	12	8.197		
51	7.374	31	7.924	11	8.211		
50	7.449	30	7.936	10	8.227		
49	7.510	29	7.946	9	8.235		
48	7.560	28	7.965	8	8.229		
47	7.596	27	7.988	7	8.206		

Older Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
67	5.486	47	7.325	27	7.683	7	7.882
66	5.626	46	7.350	26	7.705	6	7.834
65	5.750	45	7.370	25	7.724	5	7.748
64	5.862	44	7.386	24	7.743	4	7.588
63	5.964	43	7.405	23	7.759	3	7.380
62	6.054	42	7.413	22	7.773	2	7.001
61	6.138	41	7.427	21	7.786	1	6.575
60	6.223	40	7.445	20	7.795	0	5.734
59	6.327	39	7.468	19	7.804		
58	6.442	38	7.493	18	7.811		
57	6.562	37	7.517	17	7.817		
56	6.677	36	7.540	16	7.824		
55	6.782	35	7.561	15	7.834		
54	6.879	34	7.581	14	7.848		
53	6.967	33	7.598	13	7.862		
52	7.047	32	7.612	12	7.876		
51	7.122	31	7.622	11	7.889		
50	7.191	30	7.632	10	7.904		
49	7.247	29	7.643	9	7.911		
48	7.293	28	7.660	8	7.905		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Sixty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
68	5.188	48	7.012	28	7.345	8	7.
67	5.333	47	7.041	27	7.366	7	7.
66	5.463	46	7.063	26	7.387	6	7.
65	5.580	45	7.080	25	7.405	5	7.
64	5.684	44	7.094	24	7.423	4	7.
	5.779	43	7.106	23	7.438	3	7.0
	5.862	42	7.117	22	7.451	2	6.7
61	5.940	41	7.130	21	7.462	1	6.3
60	6.018	40	7.146	20	7.470	0	5.5
59	6.116	39	7.168	19	7.478		
58	6.224	38	7.191	18	7.484		
57	6.336	37	7.213	17	7.490		
56	6.444	36	7.234	16	7.496		
55	6.542	35	7.254	15	7.506		
54	6.632	34	7.272	14	7.518		
53	6.713	33	7.288	13	7.532		
52	6.787	32	7.301	12	7.545		
51	6.856	31	7.311	11	7.557		
50	6.920	30	7.320	10	7.570		
49	6.971	29	7.328	9	7.577		

Older Age Sixty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
69	4.877	49	6.682	29	7.004	9	7.
68	5.028	48	6.719	28	7.019	8	7.
67	5.163	47	6.744	27	7.039	7	7.
66	5.286	46	6.763	26	7.058	6	7.1
65	5.394	45	6.778	25	7.075	5	7.
64	5.490	44	6.790	24	7.091	4	6.
63	5.578	43	6.800	23	7.105	3	6.
62	5.654	42	6.810	22	7.116	2	6.4
61	5.726	41	6.821	21	7.127	1	6.
60	5.798	40	6.836	20	7.135	0	5.
59	5.890	39	6.856	19	7.141		
58	5.990	38	6.877	18	7.147		
57	6.095	37	6.898	17	7.152		
56	6.196	36	6.917	16	7.158		
55	6.287	35	6.936	15	7.166		
54	6.370	34	6.952	14	7.178		
53	6.445	33	6.967	13	7.191		
52	6.513	32	6.978	12	7.203		
51	6.576	31	6.987	11	7.214		
50	6.635	30	6.995	10	7.226		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Seventy Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
4.556	50	6.338	30	6.662	10	6.874
4.711	49	6.380	29	6.670	9	6.880
4.853	48	6.413	28	6.684	8	6.874
4.979	47	6.436	27	6.702	7	6.853
5.093	46	6.452	26	6.720	6	6.811
5.193	45	6.465	25	6.736	5	6.737
5.282	44	6.475	24	6.750	4	6.599
5.363	43	6.484	23	6.763	3	6.422
5.433	42	6.492	22	6.774	2	6.098
5.498	41	6.502	21	6.783	1	5.738
5.565	40	6.515	20	6.790	0	5.018
5.649	39	6.534	19	6.796		
5.743	38	6.554	18	6.801		
5.841	37	6.573	17	6.806		
5.934	36	6.591	16	6.811		
6.019	35	6.608	15	6.818		
6.096	34	6.623	14	6.829		
6.164	33	6.636	13	6.841		
6.227	32	6.646	12	6.852		
6.285	31	6.655	11	6.863		

Older Age Seventy-One Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
4.217	51	5.977	31	6.309	11	6.500
4.381	50	6.026	30	6.316	10	6.510
4.527	49	6.064	29	6.323	9	6.515
4.659	48	6.094	28	6.336	8	6.509
4.777	47	6.113	27	6.353	7	6.489
4.882	46	6.127	26	6.369	6	6.450
4.974	45	6.138	25	6.384	5	6.380
5.056	44	6.146	24	6.397	4	6.250
5.130	43	6.153	23	6.409	3	6.083
5.194	42	6.160	22	6.418	2	5.779
5.254	41	6.169	21	6.427	1	5.441
5.314	40	6.181	20	6.433	0	4.763
5.392	39	6.198	19	6.438		
5.479	38	6.217	18	6.443		
5.570	37	6.234	17	6.447		
5.656	36	6.251	16	6.452		
5.734	35	6.267	15	6.459		
5.805	34	6.280	14	6.469		
5.867	33	6.293	13	6.480		
5.925	32	6.302	12	6.490		

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 3 per Cent.)

Older Age Seventy-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
72	3.904	52	5.636	32	5.976	12	6.
71	4.056	51	5.684	31	5.983	11	6.
70	4.211	50	5.729	30	5.989	10	6.
69	4.348	49	5.763	29	5.995	9	6.
68	4.471	48	5.789	28	6.007	8	6.
67	4.580	47	5.806	27	6.022	7	6.
66	4.677	46	5.818	26	6.038	6	6.
65	4.762	45	5.827	25	6.051	5	6.
64	4.837	44	5.831	24	6.063	4	5.
63	4.905	43	5.840	23	6.074	3	5.
62	4.963	42	5.846	22	6.083	2	5.
61	5.018	41	5.854	21	6.090	1	5.
60	5.073	40	5.865	20	6.096	0	4.
59	5.145	39	5.881	19	6.101		
58	5.226	38	5.898	18	6.105		
57	5.310	37	5.914	17	6.108		
56	5.390	36	5.929	16	6.112		
55	5.462	35	5.944	15	6.119		
54	5.527	34	5.956	14	6.128		
53	5.584	33	5.968	13	6.138		

Older Age Seventy-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
73	3.631	53	5.326	33	5.673	13	5.
72	3.764	52	5.374	32	5.681	12	5.
71	3.908	51	5.418	31	5.687	11	5.
70	4.054	50	5.458	30	5.692	10	5.
69	4.182	49	5.489	29	5.698	9	5.
68	4.297	48	5.513	28	5.709	8	5.
67	4.399	47	5.528	27	5.723	7	5.
66	4.489	46	5.538	26	5.738	6	5.
65	4.568	45	5.545	25	5.750	5	5.
64	4.637	44	5.551	24	5.761	4	5.
63	4.699	43	5.556	23	5.771	3	5.
62	4.752	42	5.561	22	5.779	2	5.
61	4.802	41	5.568	21	5.786	1	4.
60	4.853	40	5.578	20	5.791	0	4.
59	4.920	39	5.592	19	5.795		
58	4.995	38	5.609	18	5.799		
57	5.073	37	5.624	17	5.802		
56	5.147	36	5.638	16	5.805		
55	5.213	35	5.651	15	5.811		
54	5.273	34	5.663	14	5.820		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
74	3.400	54	5.048	34	5.403	14	5.547
73	3.512	53	5.097	33	5.412	13	5.556
72	3.639	52	5.141	32	5.419	12	5.564
71	3.776	51	5.181	31	5.424	11	5.572
70	3.914	50	5.218	30	5.429	10	5.580
69	4.035	49	5.247	29	5.434	9	5.583
68	4.143	48	5.267	28	5.445	8	5.578
67	4.238	47	5.280	27	5.458	7	5.560
66	4.322	46	5.289	26	5.471	6	5.526
65	4.395	45	5.295	25	5.483	5	5.467
64	4.459	44	5.299	24	5.493	4	5.357
63	4.515	43	5.304	23	5.502	3	5.217
62	4.564	42	5.308	22	5.510	2	4.961
61	4.610	41	5.314	21	5.516	1	4.680
60	4.657	40	5.323	20	5.520	0	4.107
59	4.719	39	5.337	19	5.524		
58	4.789	38	5.352	18	5.527		
57	4.862	37	5.366	17	5.530		
56	4.931	36	5.379	16	5.533		
55	4.993	35	5.392	15	5.539		

Older Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
75	3.231	55	4.813	35	5.179	15	5.315
74	3.313	54	4.865	34	5.189	14	5.322
73	3.421	53	4.910	33	5.198	13	5.330
72	3.541	52	4.951	32	5.204	12	5.338
71	3.672	51	4.988	31	5.209	11	5.345
70	3.804	50	5.022	30	5.213	10	5.353
69	3.919	49	5.047	29	5.218	9	5.356
68	4.021	48	5.066	28	5.227	8	5.351
67	4.110	47	5.077	27	5.240	7	5.334
66	4.189	46	5.084	26	5.253	6	5.301
65	4.257	45	5.089	25	5.263	5	5.244
64	4.315	44	5.093	24	5.273	4	5.140
63	4.368	43	5.097	23	5.281	3	5.006
62	4.412	42	5.100	22	5.288	2	4.762
61	4.454	41	5.106	21	5.294	1	4.495
60	4.498	40	5.115	20	5.298	0	3.947
59	4.556	39	5.127	19	5.301		
58	4.622	38	5.142	18	5.304		
57	4.691	37	5.155	17	5.306		
56	4.756	36	5.167	16	5.309		

Value of £1 per Annum during the joint Continuance of Two Lives
(Carlisle 3 per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
76	3.068	56	4.581	36	4.959	16	5.
75	3.147	55	4.635	35	4.970	15	5.
74	3.225	54	4.683	34	4.979	14	5.
73	3.328	53	4.725	33	4.987	13	5.
72	3.443	52	4.762	32	4.993	12	5.
71	3.568	51	4.797	31	4.997	11	5.
70	3.693	50	4.828	30	5.001	10	5.
69	3.802	49	4.851	29	5.005	9	5.
68	3.898	48	4.867	28	5.014	8	5.
67	3.982	47	4.877	27	5.026	7	5.
66	4.055	46	4.883	26	5.038	6	5.
65	4.117	45	4.887	25	5.048	5	5.
64	4.172	44	4.890	24	5.057	4	4.
63	4.220	43	4.893	23	5.064	3	4.
62	4.261	42	4.896	22	5.071	2	4.
61	4.299	41	4.901	21	5.076	1	4.
60	4.339	40	4.909	20	5.079	0	3.
59	4.394	39	4.921	19	5.082		
58	4.456	38	4.935	18	5.085		
57	4.520	37	4.947	17	5.087		

Older Age Seventy-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
77	2.927	57	4.362	37	4.755	17	4.
76	2.995	56	4.419	36	4.766	16	4.
75	3.070	55	4.470	35	4.776	15	4.
74	3.145	54	4.514	34	4.784	14	4.
73	3.243	53	4.553	33	4.792	13	4.
72	3.353	52	4.587	32	4.797	12	4.
71	3.472	51	4.619	31	4.801	11	4.
70	3.591	50	4.647	30	4.804	10	4.
69	3.694	49	4.668	29	4.808	9	4.
68	3.784	48	4.683	28	4.816	8	4.
67	3.863	47	4.691	27	4.828	7	4.
66	3.930	46	4.696	26	4.839	6	4.
65	3.988	45	4.699	25	4.848	5	4.
64	4.038	44	4.701	24	4.856	4	4.
63	4.082	43	4.703	23	4.863	3	4.
62	4.120	42	4.706	22	4.869	2	4.
61	4.155	41	4.711	21	4.874	1	4.
60	4.192	40	4.719	20	4.877	0	3.
59	4.243	39	4.730	19	4.879		
58	4.301	38	4.743	18	4.882		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Seventy-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
78	2.784	58	4.141	38	4.547	18	4.675
77	2.853	57	4.199	37	4.558	17	4.676
76	2.917	56	4.252	36	4.568	16	4.679
75	2.989	55	4.299	35	4.578	15	4.683
74	3.059	54	4.340	34	4.586	14	4.689
73	3.152	53	4.375	33	4.592	13	4.696
72	3.257	52	4.407	32	4.597	12	4.702
71	3.370	51	4.435	31	4.600	11	4.708
70	3.483	50	4.461	30	4.603	10	4.715
69	3.580	49	4.480	29	4.607	9	4.717
68	3.664	48	4.493	28	4.615	8	4.711
67	3.737	47	4.500	27	4.625	7	4.696
66	3.800	46	4.504	26	4.636	6	4.667
65	3.853	45	4.506	25	4.644	5	4.618
64	3.898	44	4.508	24	4.652	4	4.527
63	3.939	43	4.510	23	4.658	3	4.413
62	3.973	42	4.512	22	4.664	2	4.203
61	4.005	41	4.517	21	4.668	1	3.974
60	4.039	40	4.524	20	4.670	0	3.501
59	4.087	39	4.535	19	4.673		

Older Age Seventy-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
79	2.610	59	3.905	39	4.315	19	4.441
78	2.694	58	3.956	38	4.326	18	4.443
77	2.759	57	4.010	37	4.336	17	4.444
76	2.819	56	4.059	36	4.346	16	4.446
75	2.886	55	4.102	35	4.354	15	4.450
74	2.952	54	4.140	34	4.361	14	4.456
73	3.039	53	4.172	33	4.367	13	4.462
72	3.138	52	4.201	32	4.372	12	4.468
71	3.245	51	4.226	31	4.374	11	4.474
70	3.351	50	4.250	30	4.377	10	4.479
69	3.441	49	4.267	29	4.380	9	4.481
68	3.520	48	4.278	28	4.387	8	4.476
67	3.586	47	4.284	27	4.397	7	4.461
66	3.644	46	4.287	26	4.407	6	4.434
65	3.692	45	4.289	25	4.415	5	4.387
64	3.733	44	4.290	24	4.422	4	4.302
63	3.770	43	4.291	23	4.428	3	4.195
62	3.800	42	4.294	22	4.433	2	3.996
61	3.830	41	4.298	21	4.436	1	3.782
60	3.861	40	4.304	20	4.439	0	3.335

Value of £1 per Annum during the joint Continuance of Two Li
(Carlisle 3 per Cent.)

Older Age Eighty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
80	2.459	59	3.737	38	4.122	17
79	2.532	58	3.785	37	4·131	16
78	2.611	57	3.834	36	4.140	15
77	2.672	56	3.880	35	4.148	14
76	2.728	55	3.920	34	4.154	13
75	2.790	54	3.954	33	4.160	12
74	2.852	53	3.984	32	4.164	11
73	2.935	52	4.010	31	4.166	10
72	3.028	51	4.033	30	4.168	9
71	3.129	50	4.054	29	4.171	8
70	3.228	49	4.069	28	4.178	7
69	3.312	48	4.079	27	4.187	6
68	3.385	47	4.084	26	4.196	5
67	3.446	46	4.086	25	4.203	4
66	3.498	45	4.087	24	4.210	3
65	3.542	44	4.088	23	4.215	2
64	3.580	43	4.090	22	4.219	1
63	3.613	42	4.091	21	4.223	0
62	3.640	41	4.095	20	4.225	
61	3.667	40	4.102	19	4.227	
60	3.695	39	4.111	18	4.228	

Older Age Eighty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
81	2.283	60	3.510	39	3.888	18
80	2.368	59	3.548	38	3.898	17
79	2.436	58	3.593	37	3.907	16
78	2.510	57	3.639	36	3.915	15
77	2.566	56	3.681	35	3.922	14
76	2.618	55	3.717	34	3.928	13
75	2.676	54	3.748	33	3.933	12
74	2.734	53	3.775	32	3.936	11
73	2.811	52	3.798	31	3.938	10
72	2.899	51	3.819	30	3.940	9
71	2.992	50	3.838	29	3.943	8
70	3.085	49	3.851	28	3.949	7
69	3.163	48	3.860	27	3.958	6
68	3.229	47	3.864	26	3.966	5
67	3.285	46	3.865	25	3.973	4
66	3.332	45	3.866	24	3.979	3
65	3.372	44	3.867	23	3.983	2
64	3.405	43	3.868	22	3.987	1
63	3.435	42	3.870	21	3.990	0
62	3.460	41	3.874	20	3.992	
61	3.484	40	3.879	19	3.993	

lue of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Eighty-Two Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
2.135	61	3.318	40	3.679	19	3.783
2.207	60	3.342	39	3.688	18	3.784
2.286	59	3.378	38	3.697	17	3.786
2.350	58	3.419	37	3.705	16	3.787
2.419	57	3.462	36	3.712	15	3.790
2.471	56	3.501	35	3.719	14	3.795
2.518	55	3.534	34	3.724	13	3.800
2.573	54	3.562	33	3.728	12	3.805
2.626	53	3.586	32	3.731	11	3.809
2.699	52	3.607	31	3.733	10	3.813
2.781	51	3.626	30	3.735	9	3.815
2.869	50	3.643	29	3.737	8	3.810
2.955	49	3.655	28	3.743	7	3.797
3.027	48	3.662	27	3.751	6	3.774
3.088	47	3.665	26	3.759	5	3.735
3.138	46	3.667	25	3.765	4	3.664
3.181	45	3.667	24	3.770	3	3.576
3.217	44	3.668	23	3.775	2	3.412
3.247	43	3.669	22	3.778	1	3.238
3.274	42	3.670	21	3.781	0	2.865
3.297	41	3.674	20	3.782		

Older Age Eighty-Three Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.978	62	3.125	41	3.468	20	3.567
2.053	61	3.145	40	3.473	19	3.568
2.120	60	3.167	39	3.481	18	3.569
2.195	59	3.200	38	3.489	17	3.570
2.254	58	3.238	37	3.497	16	3.571
2.318	57	3.277	36	3.504	15	3.574
2.365	56	3.313	35	3.509	14	3.579
2.409	55	3.343	34	3.514	13	3.583
2.459	54	3.369	33	3.518	12	3.588
2.509	53	3.390	32	3.521	11	3.592
2.577	52	3.409	31	3.522	10	3.596
2.653	51	3.426	30	3.524	9	3.597
2.735	50	3.441	29	3.526	8	3.592
2.815	49	3.452	28	3.531	7	3.580
2.881	48	3.459	27	3.539	6	3.558
2.936	47	3.461	26	3.546	5	3.522
2.983	46	3.462	25	3.551	4	3.456
3.021	45	3.462	24	3.556	3	3.374
3.054	44	3.463	23	3.560	2	3.221
3.081	43	3.464	22	3.563	1	3.059
3.106	42	3.465	21	3.566	0	2.710

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 3 per Cent.)

Older Age Eighty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
84	1.825	62	2.956	40	3.273	18
83	1.899	61	2.974	39	3.281	17
82	1.969	60	2.995	38	3.289	16
81	2.031	59	3.025	37	3.295	15
80	2.101	58	3.060	36	3.301	14
79	2.155	57	3.097	35	3.307	13
78	2.214	56	3.130	34	3.311	12
77	2.258	55	3.157	33	3.314	11
76	2.298	54	3.180	32	3.317	10
75	2.345	53	3.199	31	3.318	9
74	2.391	52	3.216	30	3.319	8
73	2.454	51	3.231	29	3.321	7
72	2.525	50	3.245	28	3.326	6
71	2.601	49	3.255	27	3.333	5
70	2.675	48	3.261	26	3.339	4
69	2.736	47	3.262	25	3.345	3
68	2.786	46	3.263	24	3.349	2
67	2.828	45	3.263	23	3.353	1
66	2.863	44	3.264	22	3.355	0
65	2.892	43	3.264	21	3.358	
64	2.916	42	3.266	20	3.359	
63	2.938	41	3.269	19	3.360	

Older Age Eighty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
85	1.657	63	2.761	41	3.061	19
84	1.738	62	2.777	40	3.065	18
83	1.806	61	2.794	39	3.072	17
82	1.871	60	2.812	38	3.079	16
81	1.929	59	2.840	37	3.085	15
80	1.993	58	2.873	36	3.091	14
79	2.043	57	2.906	35	3.095	13
78	2.098	56	2.936	34	3.099	12
77	2.137	55	2.961	33	3.102	11
76	2.174	54	2.982	32	3.104	10
75	2.217	53	2.999	31	3.106	9
74	2.259	52	3.014	30	3.107	8
73	2.318	51	3.028	29	3.108	7
72	2.384	50	3.040	28	3.113	6
71	2.454	49	3.049	27	3.119	5
70	2.522	48	3.054	26	3.126	4
69	2.577	47	3.055	25	3.130	3
68	2.623	46	3.056	24	3.134	2
67	2.661	45	3.056	23	3.137	1
66	2.692	44	3.056	22	3.140	0
65	2.719	43	3.057	21	3.142	
64	2.741	42	3.058	20	3.143	

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Eighty-Six Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
09	64	2.585	42	2.876	20	2.954
80	63	2.603	41	2.879	19	2.954
56	62	2.618	40	2.883	18	2.955
20	61	2.634	39	2.889	17	2.956
81	60	2.651	38	2.895	16	2.957
34	59	2.677	37	2.901	15	2.959
94	58	2.707	36	2.906	14	2.963
39	57	2.738	35	2.910	13	2.967
91	56	2.765	34	2.914	12	2.970
27	55	2.788	33	2.917	11	2.973
61	54	2.807	32	2.919	10	2.976
01	53	2.822	31	2.920	9	2.976
40	52	2.836	30	2.921	8	2.972
95	51	2.849	29	2.922	7	2.962
57	50	2.860	28	2.926	6	2.945
22	49	2.868	27	2.933	5	2.916
85	48	2.873	26	2.938	4	2.862
36	47	2.874	25	2.943	3	2.797
77	46	2.874	24	2.946	2	2.674
12	45	2.874	23	2.949	1	2.546
41	44	2.874	22	2.951	0	2.263
65	43	2.875	21	2.953		

Older Age Eighty-Seven Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
89	65	2.438	43	2.727	21	2.799
47	64	2.457	42	2.727	20	2.800
15	63	2.474	41	2.730	19	2.800
87	62	2.488	40	2.734	18	2.801
47	61	2.502	39	2.739	17	2.802
04	60	2.518	38	2.746	16	2.803
53	59	2.543	37	2.751	15	2.805
10	58	2.571	36	2.755	14	2.808
52	57	2.600	35	2.759	13	2.813
01	56	2.625	34	2.763	12	2.815
35	55	2.646	33	2.765	11	2.817
67	54	2.663	32	2.767	10	2.820
04	53	2.678	31	2.768	9	2.821
41	52	2.691	30	2.769	8	2.817
93	51	2.703	29	2.770	7	2.807
51	50	2.713	28	2.775	6	2.791
12	49	2.720	27	2.780	5	2.763
71	48	2.725	26	2.786	4	2.713
18	47	2.726	25	2.789	3	2.652
57	46	2.726	24	2.793	2	2.536
89	45	2.726	23	2.795	1	2.416
16	44	2.726	22	2.797	0	2.149

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.328	65	2.362	42	2.638	19	2.707
87	1.358	64	2.380	41	2.640	18	2.707
86	1.414	63	2.397	40	2.643	17	2.708
85	1.479	62	2.410	39	2.649	16	2.709
84	1.548	61	2.424	38	2.655	15	2.711
83	1.606	60	2.439	37	2.660	14	2.714
82	1.660	59	2.462	36	2.664	13	2.717
81	1.707	58	2.489	35	2.668	12	2.720
80	1.761	57	2.516	34	2.671	11	2.723
79	1.803	56	2.540	33	2.673	10	2.726
78	1.849	55	2.560	32	2.675	9	2.726
77	1.881	54	2.577	31	2.676	8	2.722
76	1.912	53	2.591	30	2.677	7	2.713
75	1.948	52	2.603	29	2.678	6	2.697
74	1.983	51	2.614	28	2.682	5	2.671
73	2.033	50	2.624	27	2.688	4	2.623
72	2.088	49	2.631	26	2.693	3	2.564
71	2.147	48	2.635	25	2.696	2	2.453
70	2.203	47	2.636	24	2.700	1	2.338
69	2.248	46	2.636	23	2.702	0	2.081
68	2.285	45	2.636	22	2.704		
67	2.315	44	2.636	21	2.705		
66	2.341	43	2.637	20	2.706		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.248	66	2.252	43	2.533	20	2.599
88	1.287	65	2.273	42	2.534	19	2.599
87	1.314	64	2.290	41	2.536	18	2.600
86	1.368	63	2.306	40	2.539	17	2.600
85	1.430	62	2.318	39	2.544	16	2.601
84	1.496	61	2.331	38	2.550	15	2.603
83	1.551	60	2.345	37	2.554	14	2.606
82	1.603	59	2.368	36	2.559	13	2.609
81	1.648	58	2.393	35	2.562	12	2.612
80	1.699	57	2.419	34	2.565	11	2.615
79	1.739	56	2.442	33	2.568	10	2.617
78	1.783	55	2.460	32	2.569	9	2.617
77	1.814	54	2.476	31	2.570	8	2.614
76	1.843	53	2.490	30	2.571	7	2.605
75	1.877	52	2.501	29	2.572	6	2.590
74	1.911	51	2.512	28	2.576	5	2.565
73	1.959	50	2.522	27	2.581	4	2.519
72	2.012	49	2.528	26	2.586	3	2.464
71	2.067	48	2.532	25	2.589	2	2.357
70	2.121	47	2.533	24	2.592	1	2.248
69	2.163	46	2.533	23	2.595	0	2.002
68	2.199	45	2.532	22	2.596		
67	2.228	44	2.532	21	2.598		

e of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Ninety Years.

alue.	Age.	Value.	Age.	Value.	Age.	Value.
.088	67	2.088	44	2.374	21	2.436
.165	66	2.112	43	2.375	20	2.437
.201	65	2.131	42	2.375	19	2.437
.226	64	2.147	41	2.377	18	2.438
.277	63	2.162	40	2.380	17	2.438
.335	62	2.174	39	2.385	16	2.439
.397	61	2.186	38	2.391	15	2.441
.448	60	2.199	37	2.395	14	2.444
.497	59	2.220	36	2.399	13	2.447
.540	58	2.244	35	2.403	12	2.449
.589	57	2.268	34	2.405	11	2.451
.626	56	2.289	33	2.408	10	2.454
.668	55	2.307	32	2.409	9	2.454
.698	54	2.322	31	2.410	8	2.451
.725	53	2.335	30	2.411	7	2.443
.758	52	2.346	29	2.412	6	2.429
.789	51	2.356	28	2.416	5	2.405
.834	50	2.365	27	2.420	4	2.362
.884	49	2.371	26	2.425	3	2.310
.936	48	2.374	25	2.428	2	2.210
.987	47	2.375	24	2.431	1	2.107
.027	46	2.375	23	2.433	0	1.876
.061	45	2.375	22	2.435		

Older Age Ninety-One Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.050	68	2.044	45	2.357	22	2.417
1.069	67	2.072	44	2.357	21	2.418
1.144	66	2.096	43	2.357	20	2.419
1.179	65	2.115	42	2.358	19	2.419
1.205	64	2.131	41	2.359	18	2.420
1.255	63	2.146	40	2.363	17	2.420
1.314	62	2.158	39	2.367	16	2.421
1.376	61	2.169	38	2.373	15	2.423
1.427	60	2.182	37	2.377	14	2.426
1.477	59	2.203	36	2.381	13	2.429
1.520	58	2.226	35	2.385	12	2.431
1.570	57	2.251	34	2.388	11	2.434
1.607	56	2.272	33	2.390	10	2.436
1.649	55	2.290	32	2.391	9	2.436
1.679	54	2.305	31	2.392	8	2.433
1.707	53	2.318	30	2.393	7	2.425
1.740	52	2.329	29	2.394	6	2.411
1.771	51	2.339	28	2.398	5	2.387
1.816	50	2.348	27	2.402	4	2.344
1.866	49	2.354	26	2.407	3	2.292
1.919	48	2.357	25	2.410	2	2.192
1.969	47	2.358	24	2.413	1	2.089
2.010	46	2.357	23	2.415	0	1.859

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
92	1.120	72	1.940	52	2.422	32	2.485	12	2.526
91	1.084	71	1.995	51	2.432	31	2.486	11	2.529
90	1.102	70	2.048	50	2.441	30	2.487	10	2.531
89	1.180	69	2.091	49	2.447	29	2.488	9	2.532
88	1.217	68	2.127	48	2.450	28	2.491	8	2.528
87	1.245	67	2.156	47	2.451	27	2.496	7	2.520
86	1.297	66	2.181	46	2.450	26	2.501	6	2.505
85	1.359	65	2.201	45	2.450	25	2.504	5	2.480
84	1.424	64	2.218	44	2.449	24	2.507	4	2.435
83	1.479	63	2.232	43	2.449	23	2.510	3	2.380
82	1.531	62	2.244	42	2.450	22	2.511	2	2.276
81	1.577	61	2.255	41	2.452	21	2.513	1	2.168
80	1.629	60	2.269	40	2.455	20	2.514	0	1.928
79	1.668	59	2.290	39	2.460	19	2.514		
78	1.713	58	2.315	38	2.466	18	2.514		
77	1.744	57	2.340	37	2.470	17	2.515		
76	1.774	56	2.363	36	2.475	16	2.516		
75	1.808	55	2.381	35	2.478	15	2.517		
74	1.341	54	2.397	34	2.481	14	2.520		
73	1.887	53	2.410	33	2.484	13	2.524		

Older Age Ninety-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
93	1.226	73	1.977	53	2.518	33	2.592	13	2.632
92	1.171	72	2.032	52	2.530	32	2.593	12	2.635
91	1.133	71	2.090	51	2.540	31	2.594	11	2.637
90	1.151	70	2.146	50	2.549	30	2.594	10	2.640
89	1.232	69	2.191	49	2.555	29	2.595	9	2.640
88	1.272	68	2.228	48	2.558	28	2.599	8	2.637
87	1.301	67	2.258	47	2.558	27	2.604	7	2.628
86	1.357	66	2.283	46	2.557	26	2.609	6	2.612
85	1.422	65	2.304	45	2.556	25	2.613	5	2.586
84	1.491	64	2.320	44	2.556	24	2.616	4	2.539
83	1.549	63	2.335	43	2.556	23	2.620	3	2.482
82	1.605	62	2.346	42	2.556	22	2.620	2	2.373
81	1.653	61	2.358	41	2.558	21	2.621	1	2.260
80	1.707	60	2.371	40	2.562	20	2.622	0	2.010
79	1.749	59	2.393	39	2.567	19	2.622		
78	1.795	58	2.419	38	2.573	18	2.623		
77	1.828	57	2.445	37	2.578	17	2.623		
76	1.859	56	2·469	36	2.582	16	2.624		
75	1.894	55	2.489	35	2.586	15	2.636		
74	1.929	54	2.505	34	2.589	14	2.629		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Ninety-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.302	74	1.983	54	2.559	34	2.640	14	2.679
1.262	73	2.032	53	2.572	33	2.643	13	2.682
1.205	72	2.087	52	2.583	32	2.644	12	2.685
1.164	71	2.146	51	2.593	31	2.644	11	2.687
1.183	70	2.203	50	2.602	30	2.645	10	2.690
1.266	69	2.249	49	2.607	29	2.646	9	2.690
1.308	68	2.286	48	2.609	28	2.650	8	2.686
1.339	67	2.316	47	2.609	27	2.655	7	2.677
1.397	66	2.341	46	2.609	26	2.660	6	2.661
1.465	65	2.360	45	2.607	25	2.663	5	2.635
1.537	64	2.376	44	2.607	24	2.666	4	2.587
1.596	63	2.389	43	2.606	23	2.669	3	2.529
1.654	62	2.400	42	2.607	22	2.670	2	2.418
1.703	61	2.412	41	2.609	21	2.672	1	2.304
1.759	60	2.425	40	2.612	20	2.672	0	2.050
1.802	59	2.447	39	2.618	19	2.672		
1.848	58	2.473	38	2.624	18	2.673		
1.882	57	2.500	37	2.629	17	2.673		
1.912	56	2.523	36	2.633	16	2.674		
1.948	55	2.543	35	2.637	15	2.676		

Older Age Ninety-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.383	75	1.993	55	2.575	35	2.663	15	2.699
1.340	74	2.027	54	2.590	34	2.666	14	2.703
1.298	73	2.076	53	2.603	33	2.668	13	2.706
1.239	72	2.132	52	2.613	32	2.669	12	2.709
1.197	71	2.191	51	2.622	31	2.669	11	2.711
1.217	70	2.248	50	2.630	30	2.671	10	2.714
1.303	69	2.292	49	2.634	29	2.671	9	2.714
1.347	68	2.328	48	2.636	28	2.674	8	2.710
1.379	67	2.357	47	2.636	27	2.680	7	2.701
1.439	66	2.380	46	2.634	26	2.684	6	2.684
1.509	65	2.398	45	2.633	25	2.688	5	2.658
1.582	64	2.412	44	2.632	24	2.691	4	2.610
1.643	63	2.425	43	2.632	23	2.693	3	2.551
1.701	62	2.435	42	2.633	22	2.695	2	2.441
1.750	61	2.446	41	2.635	21	2.696	1	2.327
1.806	60	2.458	40	2.639	20	2.696	0	2.072
1.848	59	2.480	39	2.644	19	2.696		
1.895	58	2.506	38	2.650	18	2.697		
1.927	57	2.533	37	2.655	17	2.697		
1.957	56	2.556	36	2.659	16	2.698		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 3 per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.424	76	1.960	56	2.523	36	2.615	16	2.649
95	1.401	75	1.993	55	2.540	35	2.618	15	2.651
94	1.354	74	2.026	54	2.554	34	2.621	14	2.654
93	1.311	73	2.073	53	2.564	33	2.622	13	2.657
92	1.251	72	2.127	52	2.573	32	2.623	12	2.660
91	1.210	71	2.184	51	2.581	31	2.624	11	2.663
90	1.231	70	2.239	50	2.588	30	2.624	10	2.665
89	1.319	69	2.281	49	2.592	29	2.625	9	2.665
88	1.364	68	2.314	48	2.593	28	2.628	8	2.660
87	1.397	67	2.339	47	2.592	27	2.633	7	2.651
86	1.458	66	2.359	46	2.591	26	2.638	6	2.635
85	1.527	65	2.375	45	2.590	25	2.641	5	2.610
84	1.599	64	2.387	44	2.589	24	2.644	4	2.563
83	1.659	63	2.398	43	2.589	23	2.646	3	2.507
82	1.715	62	2.407	42	2.589	22	2.647	2	2.400
81	1.763	61	2.417	41	2.592	21	2.648	1	2.290
80	1.817	60	2.429	40	2.595	20	2.648	0	2.043
79	1.857	59	2.451	39	2.601	19	2.648		
78	1.901	58	2.475	38	2.606	18	2.648		
77	1.932	57	2.501	37	2.611	17	2.649		

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.395	77	1.875	57	2.384	37	2.478	17	2.510
96	1.405	76	1.900	56	2.404	36	2.482	16	2.511
95	1.377	75	1.930	55	2.419	35	2.484	15	2.513
94	1.330	74	1.960	54	2.430	34	2.486	14	2.516
93	1.288	73	2.004	53	2.439	33	2.488	13	2.518
92	1.230	72	2.054	52	2.446	32	2.488	12	2.521
91	1.191	71	2.107	51	2.452	31	2.488	11	2.523
90	1.213	70	2.157	50	2.458	30	2.488	10	2.525
89	1.301	69	2.194	49	2.461	29	2.489	9	2.524
88	1.346	68	2.222	48	2.462	28	2.493	8	2.520
87	1.378	67	2.243	47	2.461	27	2.497	7	2.512
86	1.436	66	2.259	46	2.460	26	2.502	6	2.497
85	1.502	65	2.272	45	2.458	25	2.504	5	2.473
84	1.571	64	2.282	44	2.458	24	2.507	4	2.430
83	1.626	63	2.292	43	2.458	23	2.508	3	2.378
82	1.679	62	2.300	42	2.458	22	2.509	2	2.279
81	1.723	61	2.308	41	2.460	21	2.510	1	2.178
80	1.772	60	2.319	40	2.464	20	2.510	0	1.947
79	1.808	59	2.338	39	2.469	19	2.510		
78	1.848	58	2.361	38	2.474	18	2.510		

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age Ninety-Eight Years.

.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
5	78	1.782	58	2.225	38	2.318	18	2.347
7	77	1.805	57	2.245	37	2.322	17	2.348
3	76	1.826	56	2.262	36	2.324	16	2.348
3	75	1.853	55	2.274	35	2.326	15	2.350
2	74	1.879	54	2.282	34	2.328	14	2.352
2	73	1.919	53	2.289	33	2.329	13	2.355
8	72	1.964	52	2.294	32	2.329	12½	2.357
2	71	2.011	51	2.300	31	2.329	11	2.359
5	70	2.055	50	2.305	30	2.329	10	2.360
5	69	2.086	49	2.307	29	2.330	9	2.360
9	68	2.108	48	2.308	28	2.333	8	2.356
8	67	2.124	47	2.306	27	2.337	7	2.348
2	66	2.137	46	2.305	26	2.341	6	2.334
3	65	2.147	45	2.303	25	2.343	5	2.313
7	64	2.155	44	2.303	24	2.345	4	2.273
7	63	2.164	43	2.303	23	2.346	3	2.227
4	62	2.170	42	2.304	22	2.347	2	2.138
2	61	2.177	41	2.306	21	2.347	1	2.048
6	60	2.187	40	2.309	20	2.347	0	1.837
7	59	2.204	39	2.313	19	2.347		

Older Age Ninety-Nine Years.

.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
4	79	1.622	59	1.989	39	2.073	19	2.099
1	78	1.651	58	2.006	38	2.077	18	2.099
8	77	1.669	57	2.022	37	2.079	17	2.099
4	76	1.685	56	2.035	36	2.081	16	2.100
5	75	1.707	55	2.044	35	2.083	15	2.101
4	74	1.729	54	2.050	34	2.084	14	2.103
0	73	1.764	53	2.054	33	2.085	13	2.105
1	72	1.802	52	2.058	32	2.085	12	2.107
1	71	1.840	51	2.062	31	2.085	11	2.108
7	70	1.875	50	2.066	30	2.085	10	2.109
3	69	1.898	49	2.068	29	2.085	9	2.109
2	68	1.914	48	2.068	28	2.088	8	2.105
5	67	1.926	47	2.066	27	2.092	7	2.098
1	66	1.935	46	2.065	26	2.095	6	2.086
5	65	1.943	45	2.064	25	2.096	5	2.068
0	64	1.949	44	2.064	24	2.098	4	2.033
2	63	1.955	43	2.064	23	2.098	3	1.997
0	62	1.960	42	2.065	22	2.099	2	1.920
1	61	1.966	41	2.067	21	2.099	1	1.847
7	60	1.974	40	2.069	20	2.099	0	1.664

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
100	0.991	79	1.333	58	1.600	37	1.648	16	1
99	1.117	78	1.354	57	1.611	36	1.649	15	1
98	1.118	77	1.365	56	1.620	35	1.650	14	1
97	1.098	76	1.376	55	1.625	34	1.651	13	1
96	1.094	75	1.393	54	1.628	33	1.651	12	1
95	1.072	74	1.408	53	1.631	32	1.651	11	1
94	1.039	73	1.434	52	1.634	31	1.651	10	1
93	1.013	72	1.462	51	1.637	30	1.651	9	1
92	0.975	71	1.489	50	1.639	29	1.652	8	1
91	0.953	70	1.513	49	1.640	28	1.654	7	1
90	0.979	69	1.527	48	1.640	27	1.657	6	1
89	1.052	68	1.537	47	1.640	26	1.659	5	1
88	1.080	67	1.544	46	1.638	25	1.660	4	1
87	1.093	66	1.550	45	1.638	24	1.660	3	1
86	1.129	65	1.555	44	1.637	23	1.661	2	1
85	1.170	64	1.559	43	1.637	22	1.661	1	1
84	1.213	63	1.564	42	1.638	21	1.661	0	1
83	1.242	62	1.567	41	1.639	20	1.661		
82	1.268	61	1.571	40	1.641	19	1.661		
81	1.289	60	1.577	39	1.644	18	1.661		
80	1.316	59	1.588	38	1.646	17	1.661		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
101	0.687	80	1.002	59	1.172	38	1.207	17	1
100	0.807	79	1.012	58	1.180	37	1.207	16	1
99	0.884	78	1.026	57	1.186	36	1.208	15	1
98	0.870	77	1.032	56	1.191	35	1.209	14	1
97	0.852	76	1.039	55	1.194	34	1.209	13	1
96	0.851	75	1.050	54	1.196	33	1.209	12	1
95	0.835	74	1.060	53	1.197	32	1.209	11	1
94	0.811	73	1.077	52	1.199	31	1.209	10	1
93	0.794	72	1.095	51	1.201	30	1.209	9	1
92	0.767	71	1.113	50	1.202	29	1.209	8	1
91	0.753	70	1.127	49	1.202	28	1.211	7	1
90	0.776	69	1.135	48	1.202	27	1.213	6	1
89	0.833	68	1.140	47	1.201	26	1.214	5	1
88	0.847	67	1.144	46	1.201	25	1.214	4	1
87	0.853	66	1.148	45	1.200	24	1.215	3	1
86	0.879	65	1.151	44	1.200	23	1.215	2	1
85	0.909	64	1.153	43	1.201	22	1.215	1	1
84	0.937	63	1.156	42	1.201	21	1.216	0	
83	0.954	62	1.158	41	1.202	20	1.215		
82	0.971	61	1.160	40	1.203	19	1.215		
81	0.984	60	1.164	39	1.205	18	1.215		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3 per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
02	0.387	81	0.645	60	0.739	39	0.759	18	0.764
01	0.497	80	0.655	59	0.743	38	0.760	17	0.764
00	0.558	79	0.660	58	0.747	37	0.761	16	0.765
9	0.597	78	0.667	57	0.750	36	0.761	15	0.765
8	0.579	77	0.670	56	0.753	35	0.761	14	0.766
7	0.568	76	0.673	55	0.754	34	0.761	13	0.766
6	0.571	75	0.680	54	0.755	33	0.761	12	0.766
5	0.560	74	0.685	53	0.755	32	0.761	11	0.766
4	0.545	73	0.695	52	0.756	31	0.761	10	0.767
3	0.536	72	0.705	51	0.757	30	0.761	9	0.766
2	0.520	71	0.714	50	0.758	29	0.762	8	0.765
1	0.513	70	0.721	49	0.758	28	0.763	7	0.763
0	0.530	69	0.724	48	0.758	27	0.763	6	0.760
9	0.566	68	0.726	47	0.757	26	0.764	5	0.755
8	0.570	67	0.728	46	0.757	25	0.764	4	0.746
7	0.572	66	0.730	45	0.757	24	0.764	3	0.737
6	0.589	65	0.732	44	0.757	23	0.764	2	0.714
5	0.606	64	0.733	43	0.757	22	0.764	1	0.698
4	0.621	63	0.734	42	0.757	21	0.764	0	0.640
3	0.629	62	0.735	41	0.758	20	0.764		
2	0.638	61	0.737	40	0.758	19	0.764		

Older Age One Hundred and Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
03	0.108	82	0.278	61	0.312	40	0.319	19	0.321
02	0.194	81	0.280	60	0.313	39	0.320	18	0.321
01	0.231	80	0.284	59	0.314	38	0.320	17	0.321
00	0.252	79	0.285	58	0.316	37	0.320	16	0.321
99	0.265	78	0.288	57	0.317	36	0.320	15	0.322
98	0.254	77	0.289	56	0.317	35	0.320	14	0.322
97	0.252	76	0.290	55	0.318	34	0.320	13	0.322
96	0.253	75	0.293	54	0.318	33	0.320	12	0.322
95	0.248	74	0.294	53	0.318	32	0.320	11	0.322
94	0.243	73	0.298	52	0.319	31	0.320	10	0.322
93	0.240	72	0.302	51	0.319	30	0.320	9	0.322
92	0.233	71	0.305	50	0.319	29	0.320	8	0.321
91	0.231	70	0.307	49	0.319	28	0.321	7	0.321
90	0.239	69	0.308	48	0.319	27	0.321	6	0.320
89	0.254	68	0.309	47	0.319	26	0.321	5	0.318
88	0.252	67	0.309	46	0.319	25	0.321	4	0.314
87	0.254	66	0.310	45	0.319	24	0.321	3	0.311
86	0.261	65	0.310	44	0.319	23	0.321	2	0.303
85	0.267	64	0.311	43	0.319	22	0.321	1	0.298
84	0.272	63	0.311	42	0.319	21	0.321	0	0.274
83	0.275	62	0.312	41	0.319	20	0.321		

Value of £1 per Annum during the joint Continuance of Two
(Carlisle 4 per Cent.)

Older Age 0 Years.

Age.	Value.
0	8.896

Older Age One

Age.	Value.
1	11.92
0	10.29

Older Age Two Years.

Age.	Value.
2	13.671
1	12.765
0	11.018

Older Age Three

Age.	Value.
3	15.26
2	14.44
1	13.48
0	11.63

Older Age Four Years.

Ago.	Value.
4	16.147
3	15.696
2	14.854
1	13.867
0	11.965

Older Age Five

Age.	Value.
5	16.80
4	16.46
3	16.00
2	15.15
1	14.14
0	12.20

Older Age Six Years.

Age.	Value.	Age.	Value.
6	17.112	2	15.287
5	16.954	1	14.269
4	16.620	0	12.311
3	16.155		

Older Age Seven

Age.	Value.	Age.
7	17.242	3
6	17.175	2
5	17.017	1
4	16.681	0

e of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

r Age Eight Years.			Older Age Nine Years.			
lue.	Age.	Value.	Age.	Value.	Age.	Value.
.251	3	16.214	9	17.179	4	16.644
.244	2	15.343	8	17.213	3	16.178
.178	1	14.322	7	17.207	2	15.308
.019	0	12.356	6	17.140	1	14.288
.683			5	16.982	0	12.328

er Age Ten Years.			Older Age Eleven Years.			
lue.	Age.	Value.	Age.	Value.	Age.	Value.
.049	4	16.578	11	16.891	5	16.831
.112	3	16.112	10	16.968	4	16.496
.147	2	15.245	9	17.031	3	16.032
.140	1	14.230	8	17.065	2	15.169
.073	0	12.278	7	17.058	1	14.160
.913			6	16.989	0	12.216

Age Twelve Years.			Older Age Thirteen Years.			
lue.	Age.	Value.	Age.	Value.	Age.	Value.
.737	5	16.749	13	16.582	6	16.824
.813	4	16.415	12	16.658	5	16.665
.889	3	15.953	11	16.733	4	16.332
.951	2	15.095	10	16.809	3	15.873
.984	1	14.089	9	16.870	2	15.017
.975	0	12.156	8	16.900	1	14.017
.908			7	16.892	0	12.094

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Fourteen Years.				Older Age Fifteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
14	16.425	6	16.737	15	16.272	7	16.721
13	16.502	5	16.579	14	16.347	6	16.652
12	16.578	4	16.248	13	16.424	5	16.494
11	16.651	3	15.789	12	16.498	4	16.163
10	16.726	2	14.938	11	16.570	3	15.706
9	16.785	1	13.943	10	16.643	2	14.860
8	16.816	0	12.031	9	16.702	1	13.870
7	16.806			8	16.732	0	11.968

Older Age Sixteen Years.				Older Age Seventeen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
16	16.134	7	16.643	17	16.097	8	16.580
15	16.202	6	16.573	16	16.070	7	16.568
14	16.277	5	16.414	15	16.137	6	16.498
13	16.351	4	16.085	14	16.209	5	16.339
12	16.425	3	15.630	13	16.283	4	16.011
11	16.495	2	14.787	12	16.354	3	15.557
10	16.568	1	13.802	11	16.425	2	14.718
9	16.625	0	11.910	10	16.496	1	13.738
8	16.654			9	16.552	0	11.854

Older Age Eighteen Years.				Older Age Nineteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
18	15.880	8	16.505	19	15.748	9	16.400
17	15.943	7	16.492	18	15.813	8	16.425
16	16.004	6	16.421	17	15.874	7	16.411
15	16.070	5	16.263	16	15.934	6	16.341
14	16.141	4	15.935	15	15.999	5	16.182
13	16.213	3	15.483	14	16.068	4	15.855
12	16.285	2	14.648	13	16.140	3	15.406
11	16.353	1	13.672	12	16.209	2	14.574
10	16.423	0	11.798	11	16.277	1	13.604
9	16.478			10	16.346	0	11.739

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Twenty Years.

	Age.	Value.	Age.	Value.	Age.	Value.
0	14	15.993	8	16.341	2	14.497
7	13	16.062	7	16.327	1	13.531
2	12	16.130	6	16.255	0	11.677
1	11	16.197	5	16.097		
1	10	16.264	4	15.771		
2	9	16.316	3	15.324		

Older Age Twenty-One Years.

	Age.	Value.	Age.	Value.	Age.	Value.
6	15	15.844	9	16.229	3	15.238
6	14	15.911	8	16.253	2	14.415
3	13	15.980	7	16.237	1	13.456
6	12	16.046	6	16.166	0	11.612
4	11	16.112	5	16.007		
1	10	16.177	4	15.683		

Older Age Twenty-Two Years.

	Age.	Value.	Age.	Value.	Age.	Value.
0	16	15.696	10	16.083	4	15.588
7	15	15.756	9	16.134	3	15.145
6	14	15.822	8	16.156	2	14.326
1	13	15.889	7	16.141	1	13.373
2	12	15.955	6	16.068	0	11.541
9	11	16.018	5	15.910		

Older Age Twenty-Three Years.

	Age.	Value.	Age.	Value.	Age.	Value.
8	16	15.604	9	16.032	2	14.234
8	15	15.663	8	16.055	1	13.296
3	14	15.728	7	16.038	0	11.467
0	13	15.794	6	15.965		
4	12	15.857	5	15.808		
3	11	15.920	4	15.487		
0	10	15.983	3	15.046		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	14.978	17	15.454	10	15.878	3	14.943
23	15.061	16	15.507	9	15.927	2	14.136
22	15.140	15	15.565	8	15.947	1	13.195
21	15.213	14	15.628	7	15.930	0	11.389
20	15.280	13	15.692	6	15.857		
19	15.341	12	15.755	5	15.701		
18	15.400	11	15.816	4	15.380		

Older Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	14.800	18	15.300	11	15.706	4	15.269
24	14.888	17	15.352	10	15.768	3	14.634
23	14.970	16	15.404	9	15.814	2	14.033
22	15.046	15	15.460	8	15.833	1	13.099
21	15.118	14	15.522	7	15.816	0	11.307
20	15.182	13	15.585	6	15.743		
19	15.243	12	15.646	5	15.586		

Older Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	14.620	19	15.141	12	15.534	5	15.470
25	14.709	18	15.196	11	15.594	4	15.154
24	14.795	17	15.248	10	15.652	3	14.722
23	14.874	16	15.298	9	15.698	2	13.927
22	14.950	15	15.352	8	15.717	1	13.001
21	15.019	14	15.413	7	15.699	0	11.223
20	15.083	13	15.475	6	15.625		

Older Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	14.431	20	14.976	13	15.357	6	15.502
26	14.524	19	15.033	12	15.417	5	15.347
25	14.611	18	15.086	11	15.473	4	15.033
24	14.695	17	15.136	10	15.531	3	14.606
23	14.773	16	15.185	9	15.576	2	13.816
22	14.846	15	15.238	8	15.594	1	12.697
21	14.915	14	15.297	7	15.574	0	11.134

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Twenty-Eight Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
[illegible]	14.244	20	14.868	12	15.296	4	14.911
[illegible]	14.336	19	14.924	11	15.352	3	14.486
[illegible]	14.427	18	14.975	10	15.409	2	13.703
[illegible]	14.512	17	15.021	9	15.453	1	12.792
4	14.594	16	15.071	8	15.469	0	11.044
3	14.670	15	15.123	7	15.450		
2	14.742	14	15.180	6	15.377		
1	14.808	13	15.240	5	15.223		

Older Age Twenty-Nine Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
29	14.075	21	14.709	13	15.128	5	15.106
28	14.158	20	14.767	12	15.184	4	14.797
27	14.249	19	14.821	11	15.239	3	14.374
26	14.337	18	14.871	10	15.295	2	13.597
25	14.421	17	14.918	9	15.336	1	12.694
24	14.500	16	14.965	8	15.353	0	10.960
23	14.575	15	15.015	7	15.333		
22	14.644	14	15.072	6	15.260		

Older Age Thirty Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
30	13.930	22	14.557	14	14.973	6	15.154
29	14.001	21	14.621	13	15.029	5	15.001
28	14.083	20	14.677	12	15.083	4	14.693
27	14.171	19	14.729	11	15.137	3	14.273
26	14.258	18	14.778	10	15.190	2	13.502
25	14.339	17	14.824	9	15.233	1	12.605
24	14.417	16	14.868	8	15.248	0	10.883
23	14.490	15	14.918	7	15.227		

Older Age Thirty-One Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
31	13.784	23	14.402	15	14.818	7	15.119
30	13.856	22	14.468	14	14.872	6	15.046
29	13.925	21	14.530	13	14.926	5	14.893
28	14.004	20	14.584	12	14.980	4	14.587
27	14.091	19	14.635	11	15.031	3	14.170
26	14.176	18	14.683	10	15.085	2	13.404
25	14.255	17	14.726	9	15.126	1	12.514
24	14.331	16	14.771	8	15.140	0	10.806

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Thirty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
32	13.632	23	14.309	14	14.765	5	14.790
31	13.707	22	14.374	13	14.819	4	14.476
30	13.777	21	14.433	12	14.870	3	14.062
29	13.844	20	14.496	11	14.922	2	13.301
28	13.921	19	14.536	10	14.974	1	12.419
27	14.006	18	14.581	9	15.013	0	10.725
26	14.088	17	14.625	8	15.027		
25	14.166	16	14.666	7	15.006		
24	14.240	15	14.713	6	14.932		

Older Age Thirty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
33	13.469	24	14.140	15	14.599	6	14.810
32	13.550	23	14.208	14	14.651	5	14.659
31	13.622	22	14.270	13	14.702	4	14.357
30	13.689	21	14.328	12	14.754	3	13.945
29	13.755	20	14.380	11	14.803	2	13.192
28	13.830	19	14.427	10	14.854	1	12.317
27	13.912	18	14.473	9	14.893	0	10.637
26	13.993	17	14.513	8	14.906		
25	13.068	16	14.554	7	14.883		

Older Age Thirty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
34	13.294	25	13.961	16	14.433	7	14.752
33	13.381	24	14.032	15	14.477	6	14.679
32	13.459	23	14.097	14	14.526	5	14.529
31	13.528	22	14.157	13	14.578	4	14.228
30	13.594	21	14.214	12	14.627	3	13.821
29	13.657	20	14.263	11	14.676	2	13.074
28	13.730	19	14.311	10	14.726	1	12.208
27	13.809	18	14.353	9	14.763	0	10.544
26	13.888	17	14.393	8	14.775		

ue of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Thirty-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
3.111	26	13.777	17	14.266	8	14.637
3.202	25	13.848	16	14.305	7	14.615
3.285	24	13.916	15	14.347	6	14.541
3.360	23	13.980	14	14.396	5	14.391
3.428	22	14.039	13	14.446	4	14.094
3.491	21	14.093	12	14.494	3	13.690
3.552	20	14.142	11	14.542	2	12.951
3.622	19	14.186	10	14.590	1	12.093
3.700	18	14.228	9	14.626	0	10.446

Older Age Thirty-Six Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
12.919	26	13.658	16	14.169	6	14.396
13.014	25	13.727	15	14.211	5	14.248
13.102	24	13.794	14	14.258	4	13.953
13.182	23	13.855	13	14.307	3	13.553
13.255	22	13.912	12	14.354	2	12.821
13.321	21	13.966	11	14.400	1	11.973
13.381	20	14.012	10	14.447	0	10.343
13.440	19	14.055	9	14.483		
13.508	18	14.096	8	14.493		
13.584	17	14.133	7	14.470		

Older Age Thirty-Seven Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
12.724	27	13.462	17	13.993	7	14.320
12.821	26	13.535	16	14.030	6	14.247
12.912	25	13.602	15	14.070	5	14.100
12.997	24	13.666	14	14.116	4	13.808
13.075	23	13.726	13	14.163	3	13.412
13.146	22	13.782	12	14.209	2	12.688
13.208	21	13.832	11	14.254	1	11.849
13.267	20	13.877	10	14.300	0	10.237
13.323	19	13.920	9	14.334		
13.390	18	13.958	8	14.344		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Thirty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
38	12.525	28	13.265	18	13.815	8	14.190
37	12.624	27	13.336	17	13.851	7	14.166
36	12.717	26	13.407	16	13.885	6	14.093
35	12.805	25	13.472	15	13.924	5	13.947
34	12.887	24	13.534	14	13.969	4	13.658
33	12.964	23	13.593	13	14.015	3	13.266
32	13.031	22	13.645	12	14.059	2	12.550
31	13.091	21	13.650	11	14.103	1	11.721
30	13.147	20	13.739	10	14.148	0	10.127
29	13.201	19	13.779	9	14.181		

Older Age Thirty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
39	12.322	29	13.074	19	13.632	9	14.023
38	12.423	28	13.136	18	13.669	8	14.031
37	12.517	27	13.205	17	13.702	7	14.007
36	12.607	26	13.273	16	13.736	6	13.934
35	12.693	25	13.336	15	13.773	5	13.789
34	12.773	24	13.398	14	13.817	4	13.503
33	12.845	23	13.452	13	13.861	3	13.116
32	12.910	22	13.504	12	13.905	2	12.408
31	12.969	21	13.552	11	13.947	1	11.589
30	13.022	20	13.594	10	13.991	0	10.014

Older Age Forty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
40	12.125	29	12.947	18	13.522	7	13.848
39	12.222	28	13.007	17	13.555	6	13.776
38	12.319	27	13.074	16	13.587	5	13.632
37	12.411	26	13.140	15	13.623	4	13.349
36	12.498	25	13.202	14	13.665	3	12.966
35	12.581	24	13.259	13	13.708	2	12.266
34	12.657	23	13.313	12	13.751	1	11.457
33	12.727	22	13.363	11	13.792	0	9.902
32	12.790	21	13.410	10	13.835		
31	12.846	20	13.449	9	13.866		
30	12.897	19	13.488	8	13.873		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Forty-One Years.

e.	Age.	Value.	Age.	Value.	Age.	Value.
45	30	12.778	19	13.348	8	13.721
34	29	12.826	18	13.382	7	13.696
27	28	12.884	17	13.413	6	13.624
21	27	12.948	16	13.444	5	13.481
09	26	13.014	15	13.479	4	13.201
94	25	13.071	14	13.520	3	12.822
73	24	13.128	13	13.562	2	12.130
47	23	13.180	12	13.603	1	11.331
15	22	13.228	11	13.644	0	9.794
75	21	13.272	10	13.685		
28	20	13.312	9	13.715		

Older Age Forty-Two Years.

e.	Age.	Value.	Age.	Value.	Age.	Value.
72	31	12.612	20	13.176	9	13.565
57	30	12.660	19	13.210	8	13.571
42	29	12.705	18	13.243	7	13.546
32	28	12.761	17	13.273	6	13.474
23	27	12.825	16	13.302	5	13.332
09	26	12.985	15	13.336	4	13.055
90	25	12.942	14	13.376	3	12.680
67	24	12.997	13	13.417	2	11.996
38	23	13.048	12	13.458	1	11.206
03	22	13.094	11	13.496	0	9.687
60	21	13.138	10	13.536		

Older Age Forty-Three Years.

e.	Age.	Value.	Age.	Value.	Age.	Value.
02	32	12.445	21	13.001	10	13.387
86	31	12.494	20	13.038	9	13.415
67	30	12.539	19	13.071	8	13.420
49	29	12.583	18	13.103	7	13·394
36	28	12.638	17	13.131	6	13.323
24	27	12.697	16	13.160	5	13.182
06	26	12.757	15	13.192	4	12.907
84	25	12.812	14	13.231	3	12.536
59	24	12.865	13	13.272	2	11.861
27	23	12.914	12	13.310	1	11.081
89	22	12.960	11	13.348	0	9.580

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	11.426	32	12.322	20	12.893	8	13.262
43	11.513	31	12.369	19	12.926	7	13.236
42	11.592	30	12.412	18	12.955	6	13.165
41	11.670	29	12.455	17	12.982	5	13.025
40	11.749	28	12.505	16	13.010	4	12.752
39	11.833	27	12.564	15	13.041	3	12.387
38	11.917	26	12.622	14	13.080	2	11.720
37	11.996	25	12.675	13	13.117	1	10.949
36	12.072	24	12.726	12	13.155	0	9.468
35	12.143	23	12.774	11	13.192		
34	12.208	22	12.817	10	13.230		
33	12.269	21	12.858	9	13.257		

Older Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	11.243	33	12.141	21	12.706	9	13.092
44	11.333	32	12.191	20	12.741	8	13.096
43	11.416	31	12.236	19	12.771	7	13.070
42	11.491	30	12.278	18	12.800	6	12.999
41	11.566	29	12.317	17	12.826	5	12.859
40	11.641	28	12.366	16	12.852	4	12.592
39	11.722	27	12.423	15	12.884	3	12.230
38	11.802	26	12.479	14	12.919	2	11.57
37	11.879	25	12.530	13	12.957	1	10.81
36	11.951	24	12.580	12	12.993	0	9.35
35	12.019	23	12.626	11	13.029		
34	12.083	22	12.668	10	13.066		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Valu
46	11.047	34	11.946	22	12.507	10	12.8
45	11.143	33	12.001	21	12.545	9	12.9
44	11.229	32	12.050	20	12.577	8	12.9
43	11.307	31	12.093	19	12.606	7	12.8
42	11.380	30	12.130	18	12.634	6	12.8
41	11.450	29	12.169	17	12.659	5	12.6
40	11.523	28	12.216	16	12.685	4	12.4
39	11.600	27	12.271	15	12.714	3	12.0
38	11.677	26	12.325	14	12.749	2	11.4
37	11.751	25	12.375	13	12.785	1	10.6
36	11.819	24	12.422	12	12.821	0	9.2
35	11.886	23	12.467	11	12.855		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Forty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
47	10.837	35	11.740	23	12.296	11	12.670
46	10.940	34	11.798	22	12.336	10	12.704
45	11.031	33	11.850	21	12.371	9	12.728
44	11.113	32	11.897	20	12.402	8	12.731
43	11.188	31	11.936	19	12.430	7	12.702
42	11.256	30	11.973	18	12.456	6	12.634
41	11.324	29	12.009	17	12.481	5	12.497
40	11.392	28	12.055	16	12.505	4	12.237
39	11.466	27	12.107	15	12.533	3	11.886
38	11.541	26	12.160	14	12.567	2	11.247
37	11.610	25	12.207	13	12.602	1	10.511
36	11.677	24	12.254	12	12.636	0	9.094

Older Age Forty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
48	10.607	35	11.579	22	12.148	9	12.278
47	10.720	34	11.634	21	12.182	8	12.525
46	10.818	33	11.685	20	12.212	7	12.500
45	10.905	32	11.728	19	12.239	6	12.430
44	10.983	31	11.766	18	12.264	5	12.297
43	11.053	30	11.801	17	12.287	4	12.040
42	11.118	29	11.834	16	12.310	3	11.694
41	11.182	28	11.878	15	12.337	2	11.067
40	11.247	27	11.929	14	12.370	1	10.344
39	11.318	26	11.979	13	12.403	0	8.952
38	11.388	25	12.025	12	12.436		
37	11.456	24	12.069	11	12.469		
36	11.519	23	12.111	10	12.502		

Older Age Forty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
49	10.345	36	11.339	23	11.902	10	12.278
48	10.474	35	11.396	22	11.938	9	12.298
47	10.581	34	11.449	21	11.971	8	12.300
46	10.675	33	11.496	20	11.999	7	12.273
45	10.757	32	11.537	19	12.025	6	12.205
44	10.830	31	11.573	18	12.049	5	12.074
43	10.897	30	11.606	17	12.071	4	11.820
42	10.958	29	11.638	16	12.093	3	11.482
41	11.019	28	11.679	15	12.119	2	10.866
40	11.080	27	11.728	14	12.150	1	10.158
39	11.146	26	11.776	13	12.182	0	8.793
38	11.215	25	11.821	12	12.214		
37	11.279	24	11.864	11	12.245		

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 4 per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	10.059	37	11.084	24	11.639	11	12.004
49	10.200	36	11.141	23	11.677	10	12.034
48	10.322	35	11.196	22	11.711	9	12.056
47	10.425	34	11.245	21	11.743	8	12.056
46	10.513	33	11.290	20	11.769	7	12.029
45	10.591	32	11.329	19	11.794	6	11.961
44	10.661	31	11.362	18	11.816	5	11.832
43	10.723	30	11.393	17	11.837	4	11.585
42	10.781	29	11.423	16	11.858	3	11.253
41	10.837	28	11.463	15	11.882	2	10.650
40	10.894	27	11.509	14	11.912	1	9.958
39	10.959	26	11.556	13	11.944	0	8.621
38	11.023	25	11.599	12	11.974		

Older Age Fifty-One Years

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	9.748	38	10.812	25	11.357	12	11.715
50	9.901	37	10.869	24	11.396	11	11.743
49	10.035	36	10.924	23	11.432	10	11.774
48	10.152	35	10.975	22	11.465	9	11.793
47	10.249	34	11.022	21	11.494	8	11.793
46	10.332	33	11.064	20	11.520	7	11.766
45	10.407	32	11.101	19	11.543	6	11.699
44	10.471	31	11.132	18	11.565	5	11.573
43	10.530	30	11.161	17	11.584	4	11.330
42	10.583	29	11.190	16	11.603	3	11.007
41	10.635	28	11.227	15	11.627	2	10.418
40	10.691	27	11.272	14	11.656	1	9.741
39	10.751	26	11.317	13	11.686	0	8.439

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	9.434	39	10.537	26	11.071	13	11.423
51	9.589	38	10.594	25	11.110	12	11.450
50	9.735	37	10.649	24	11.147	11	11.478
49	9.863	36	10.700	23	11.182	10	11.506
48	9.974	35	10.748	22	11.212	9	11.525
47	10.065	34	10.792	21	11.241	8	11.524
46	10.145	33	10.832	20	11.265	7	11.497
45	10.214	32	10.866	19	11.287	6	11.432
44	10.274	31	10.896	18	11.307	5	11.308
43	10.329	30	10.923	17	11.325	4	11.071
42	10.378	29	10.950	16	11.344	3	10.755
41	10.429	28	10.986	15	11.367	2	10.179
40	10.480	27	11.029	14	11.394	1	9.523
						0	8.251

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Fifty-Three Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9.117	42	10.167	31	10.653	20	11.004	9	11.251
9.273	41	10.213	30	10.678	19	11.025	8	11.249
9.420	40	10.261	29	10.703	18	11.043	7	11.223
9.560	39	10.314	28	10.738	17	11.061	6	11.158
9.682	38	10.369	27	10.778	16	11.078	5	11.037
9.787	37	10.420	26	10.819	15	11.100	4	10.806
9.875	36	10.468	25	10.856	14	11.126	3	10.496
9.949	35	10.514	24	10.892	13	11.153	2	9.939
10.013	34	10.555	23	10.924	12	11.180	1	9.299
10.070	33	10.593	22	10.954	11	11.206	0	8.060
10.120	32	10.625	21	10.981	10	11.233		

Older Age Fifty-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8.796	43	9.904	32	10.377	21	10.715	10	10.954
8.953	42	9.947	31	10.403	20	10.736	9	10.970
9.102	41	9.989	30	10.426	19	10.755	8	10.968
9.243	40	10.034	29	10.450	18	10.774	7	10.942
9.376	39	10.084	28	10.483	17	10.790	6	10.878
9.492	38	10.135	27	10.522	16	10.806	5	10.760
9.593	37	10.183	26	10.560	15	10.826	4	10.533
9.674	36	10.229	25	10.596	14	10.851	3	10.235
9.744	35	10.272	24	10.629	13	10.878	2	9.691
9.804	34	10.311	23	10.661	12	10.903	1	9.069
9.856	33	10.347	22	10.689	11	10.928	0	7.864

Older Age Fifty-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8.465	43	9.676	31	10.142	19	10.477	7	10.651
8.627	42	9.715	30	10.164	18	10.494	6	10.589
8.777	41	9.754	29	10.187	17	10.509	5	10.472
8.920	40	9.796	28	10.218	16	10.524	4	10.255
9.054	39	9.843	27	10.254	15	10.543	3	9.964
9.181	38	9.891	26	10.292	14	10.567	2	9.435
9.291	37	9.937	25	10.325	13	10.592	1	8.832
9.386	36	9.979	24	10.358	12	10.616	0	7.661
9.463	35	10.020	23	10.387	11	10.640		
9.527	34	10.057	22	10.414	10	10.664		
9.583	33	10.090	21	10.438	9	10.680		
9.632	32	10.119	20	10.458	8	10.678		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
56	8.128	44	9.398	32	9.851	20	10.173	8	10.379
55	8.293	43	9.433	31	9.873	19	10.190	7	10.353
54	8.448	42	9.474	30	9.894	18	10.206	6	10.291
53	8.592	41	9.510	29	9.915	17	10.220	5	10.180
52	8.727	40	9.549	28	9.944	16	10.234	4	9.967
51	8.855	39	9.593	27	9.980	15	10.252	3	9.685
50	8.976	38	9.638	26	10.015	14	10.275	2	9.173
49	9.080	37	9.681	25	10.047	13	10.299	1	8.599
48	9.169	36	9.721	24	10.078	12	10.322	0	7.454
47	9.241	35	9.759	23	10.106	11	10.344		
46	9.301	34	9.794	22	10.131	10	10.368		
45	9.353	33	9.825	21	10.154	9	10.382		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
57	7.783	45	9.113	33	9.551	21	9.862	9	10.076
56	7.952	44	9.154	32	9.575	20	9.880	8	10.073
55	8.110	43	9.190	31	9.597	19	9.896	7	10.046
54	8.258	42	9.223	30	9.616	18	9.910	6	9.988
53	8.395	41	9.256	29	9.635	17	9.923	5	9.879
52	8.524	40	9.292	28	9.663	16	9.937	4	9.673
51	8.645	39	9.333	27	9.696	15	9.953	3	9.400
50	8.760	38	9.375	26	9.730	14	9.975	2	8.904
49	8.858	37	9.416	25	9.761	13	9.998	1	8.339
48	8.942	36	9.453	24	9.790	12	10.019	0	7.240
47	9.009	35	9.489	23	9.816	11	10.041		
46	9.065	34	9.522	22	9.840	10	10.063		

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.444	46	8.825	34	9.248	22	9.548	10	9.758
57	7.610	45	8.869	33	9.275	21	9.569	9	9.771
56	7.771	44	8.906	32	9.299	20	9.585	8	9.766
55	7.922	43	8.940	31	9.318	19	9.600		9.742
54	8.063	42	8.969	30	9.336	18	9.614		9.684
53	8.194	41	9.000	29	9.354	17	9.626	5	9.578
52	8.316	40	9.033	28	9.380	16	9.638	4	9.379
51	8.431	39	9.071	27	9.412	15	9.654	3	9.114
50	8.540	38	9.111	26	9.444	14	9.675	2	8.635
49	8.633	37	9.148	25	9.473	13	9.696	1	8.089
48	8.711	36	9.184	24	9.501	12	9.717	0	7.026
47	8.774	35	9.217	23	9.526	11	9.737		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Fifty-Nine Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
7.131	47	8.547	35	8.957	23	9.248	11	9.447
7.284	46	8.595	34	8.986	22	9.270	10	9.467
7.443	45	8.635	33	9.012	21	9.289	9	9.478
7.597	44	8.669	32	9.034	20	9.304	8	9.475
7.741	43	8.699	31	9.051	19	9.318	7	9.450
7.876	42	8.726	30	9.068	18	9.331	6	9.394
8.000	41	8.754	29	9.085	17	9.342	5	9.291
8.116	40	8.784	28	9.110	16	9.354	4	9.097
8.225	39	8.820	27	9.140	15	9.369	3	8.842
8.328	38	8.857	26	9.171	14	9.388	2	8.378
8.416	37	8.892	25	9.198	13	9.408	1	7.851
8.490	36	8.926	24	9.225	12	9.428	0	6.822

Older Age Sixty Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
6.854	47	8.337	34	8.743	21	9.029	8	9.203
6.989	46	8.381	33	8.767	20	9.043	7	9.179
7.136	45	8.417	32	8.787	19	9.056	6	9.124
7.289	44	8.448	31	8.804	18	9.068	5	9.024
7.437	43	8.475	30	8.820	17	9.078	4	8.836
7.574	42	8.500	29	8.835	16	9.089	3	8.589
7.703	41	8.525	28	8.859	15	9.103	2	8.139
7.821	40	8.553	27	8.888	14	9.122	1	7.629
7.931	39	8.587	26	8.917	13	9.141	0	6.632
8.035	38	8.622	25	8.943	12	9.159		
8.132	37	8.655	24	8.968	11	9.178		
8.214	36	8.686	23	8.991	10	9.196		
8.283	35	8.716	22	9.011	9	9.207		

Older Age Sixty-One Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
6.630	48	8.104	35	8.504	22	8.783	9	8.969
6.739	47	8.153	34	8.530	21	8.800	8	8.964
6.869	46	8.193	33	8.552	20	8.814	7	8.940
7.010	45	8.227	32	8.572	19	8.826	6	8.887
7.157	44	8.255	31	8.587	18	8.837	5	8.789
7.299	43	8.279	30	8.602	17	8.847	4	8.606
7.431	42	8.302	29	8.616	16	8.857	3	8.366
7.553	41	8.325	28	8.639	15	8.870	2	7.929
7.666	40	8.350	27	8.666	14	8.887	1	7.434
7.771	39	8.382	26	8.694	13	8.905	0	6.465
7.869	38	8.415	25	8.719	12	8.923		
7.962	37	8.446	24	8.743	11	8.940		
8.039	36	8.476	23	8.764	10	8.958		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
62	6.417	42	8.104	22	8.558	2	7.721
61	6.521	41	8.125	21	8.574	1	7.242
60	6.625	40	8.149	20	8.587	0	6.301
59	6.749	39	8.179	19	8.598		
58	6.884	38	8.210	18	8.608		
57	7.025	37	8.239	17	8.617		
56	7.161	36	8.268	16	8.626		
55	7.287	35	8.294	15	8.639		
54	7.404	34	8.318	14	8.655		
53	7.511	33	8.340	13	8.673		
52	7.611	32	8.358	12	8.690		
51	7.704	31	8.372	11	8.706		
50	7.791	30	8.386	10	8.723		
49	7.864	29	8.400	9	8.733		
48	7.925	28	8.421	8	8.728		
47	7.970	27	8.447	7	8.704		
46	8.007	26	8.474	6	8.652		
45	8.037	25	8.498	5	8.557		
44	8.062	24	8.520	4	8.379		
43	8.085	23	8.540	3	8.146		

Older Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
63	6.202	43	7.884	23	8.311	3	7.922
62	6.307	42	7.901	22	8.328	2	7.510
61	6.405	41	7.921	21	8.343	1	7.046
60	6.504	40	7.943	20	8.355	0	6.134
59	6.622	39	7.970	19	8.366		
58	6.752	38	8.000	18	8.375		
57	6.887	37	8.028	17	8.383		
56	7.017	36	8.054	16	8.392		
55	7.137	35	8.079	15	8.403		
54	7.248	34	8.102	14	8.419		
53	7.350	33	8.122	13	8.436		
52	7.444	32	8.139	12	8.452		
51	7.533	31	8.153	11	8.467		
50	7.615	30	8.165	10	8.483		
49	7.683	29	8.178	9	8.493		
48	7.739	28	8.198	8	8.488		
47	7.781	27	8.223	7	8.464		
46	7.814	26	8.249	6	8.413		
45	7.842	25	8.271	5	8.321		
44	7.864	24	8.293	4	8.148		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Sixty-Four Years.

lue.	Age.	Value.	Age.	Value.	Age.	Value.
74	44	7.651	24	8.051	4	7.904
85	43	7.669	23	8.069	3	7.685
184	42	7.685	22	8.085	2	7.288
77	41	7.702	21	8.099	1	6.840
70	40	7.723	20	8.110	0	5.958
82	39	7.748	19	8.120		
06	38	7.776	18	8.128		
35	37	7.802	17	8.136		
58	36	7.827	16	8.144		
73	35	7.851	15	8.155		
78	34	7.872	14	8.169		
74	33	7.891	13	8.185		
64	32	7.907	12	8.200		
46	31	7.919	11	8.215		
123	30	7.931	10	8.231		
87	29	7.943	9	8.239		
39	28	7.962	8	8.234		
77	27	7.986	7	8.210		
07	26	8.010	6	8.161		
31	25	8.031	5	8.071		

Older Age Sixty-Five Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
38	45	7.411	25	7.783	5	7.814
53	44	7.429	24	7.802	4	7.652
58	43	7.445	23	7.819	3	7.441
50	42	7.459	22	7.833	2	7.053
38	41	7.474	21	7.846	1	6.627
25	40	7.493	20	7.856	0	5.777
32	39	7.517	19	7.865		
50	38	7.543	18	7.873		
72	37	7.568	17	7.880		
90	36	7.591	16	7.857		
98	35	7.614	15	7.897		
98	34	7.634	14	7.911		
88	33	7.651	13	7.926		
72	32	7.666	12	7.941		
49	31	7.677	11	7.954		
21	30	7.688	10	7.969		
80	29	7.699	9	7.977		
28	28	7.717	8	7.971		
63	27	7.740	7	7.948		
90	26	7.762	6	7.900		

Value of £1 per Annum during the joint Continuance of Two Lives
(Carlisle 4 per Cent.)

Older Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
66	5.490	46	7.159	26	7.503	6	7.
65	5.611	45	7.178	25	7.522	5	7.
64	5.718	44	7.194	24	7.540	4	7.
63	5.817	43	7.207	23	7.556	3	7.
62	5.904	42	7.219	22	7.569	2	6.
61	5.986	41	7.234	21	7.581	1	6.
60	6.068	40	7.251	20	7.591	0	5.
59	6.169	39	7.273	19	7.599		
58	6.280	38	7.298	18	7.606		
57	6.396	37	7.321	17	7.612		
56	6.508	36	7.343	16	7.618		
55	6.610	35	7.364	15	7.628		
54	6.704	34	7.383	14	7.641		
53	6.788	33	7.399	13	7.655		
52	6.866	32	7.412	12	7.669		
51	6.939	31	7.423	11	7.682		
50	7.005	30	7.433	10	7.695		
49	7.060	29	7.443	9	7.703		
48	7.104	28	7.460	8	7.697		
47	7.135	27	7.481	7	7.675		

Older Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
67	5.228	47	6.893	27	7.210	7	7
66	5.355	46	6.914	26	7.230	6	7
65	5.468	45	6.931	25	7.248	5	7
64	5.570	44	6.944	24	7.265	4	7
63	5.662	43	6.956	23	7.280	3	6
62	5.743	42	6.967	22	7.292	2	6
61	5.819	41	6.979	21	7.303	1	6
60	5.895	40	6.995	20	7.312	0	5
59	5.990	39	7.016	19	7.319		
58	6.095	38	7.039	18	7.325		
57	6.205	37	7.061	17	7.331		
56	6.310	36	7.081	16	7.337		
55	6.406	35	7.101	15	7.346		
54	6.494	34	7.118	14	7.358		
53	6.573	33	7.134	13	7.371		
52	6.646	32	7.146	12	7.384		
51	6.713	31	7.156	11	7.396		
50	6.775	30	7.164	10	7.409		
49	6.825	29	7.174	9	7.416		
48	6.865	28	7.190	8	7.410		

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Sixty-Eight Years.

alue.	Age.	Value.	Age.	Value.	Age.	Value.
54	48	6.612	28	6.908	8	7.112
87	47	6.638	27	6.927	7	7.091
06	46	6.656	26	6.946	6	7.047
12	45	6.671	25	6.963	5	6.970
07	44	6.682	24	6.979	4	6.827
93	43	6.692	23	6.992	3	6.643
67	42	6.703	22	7.004	2	6.306
38	41	6.713	21	7.014	1	5.930
9	40	6.728	20	7.021	0	5.181
8	39	6.747	19	7.028		
7	38	6.769	18	7.034		
1	37	6.789	17	7.039		
9	36	6.808	16	7.044		
39	35	6.826	15	7.052		
1	34	6.842	14	7.064		
14	33	6.857	13	7.077		
11	32	6.868	12	7.088		
73	31	6.877	11	7.100		
31	30	6.885	10	7.112		
76	29	6.893	9	7.118		

Older Age Sixty-Nine Years.

e.	Age.	Value.	Age.	Value.	Age.	Value.
56	49	6.314	29	6.600	9	6.808
6	48	6.347	28	6.614	8	6.802
30	47	6.369	27	6.632	7	6.782
12	46	6.385	26	6.650	6	6.740
11	45	6.397	25	6.666	5	6.667
9	44	6.407	24	6.680	4	6.531
8	43	6.416	23	6.693	3	6.356
7	42	6.424	22	6.703	2	6.035
12	41	6.434	21	6.712	1	5.679
8	40	6.447	20	6.719	0	4.967
1	39	6.466	19	6.725		
34	38	6.486	18	6.730		
31	37	6.504	17	6.735		
3	36	6.522	16	6.740		
7	35	6.539	15	6.747		
33	34	6.554	14	6.75		
0	33	6.567	13	6.770		
52	32	6.578	12	6.781		
19	31	6.585	11	6.791		
72	30	6.593	10	6.803		

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 4 per Cent.)

Older Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
70	4.367	50	6.001	30	6.291	10	6.
69	4.512	49	6.039	29	6.298	9	6.
68	4.643	48	6.069	28	6.311	8	6.
67	4.760	47	6.088	27	6.327	7	6
66	4.864	46	6.102	26	6.344	6	6
65	4.956	45	6.113	25	6.358	5	6
64	5.036	44	6.121	24	6.372	4	6
63	5.110	43	6.129	23	6.383	3	6
62	5.173	42	6.136	22	6.393	2	5
61	5.233	41	6.145	21	6.401	1	5
60	5.293	40	6.157	20	6.407	0	4
59	5.371	39	6.174	19	6.413		
58	5.458	38	6.192	18	6.417		
57	5.548	37	6.210	17	6.421		
56	5.634	36	6.226	16	6.426		
55	5.712	35	6.242	15	6.433		
54	5.782	34	6.255	14	6.443		
53	5.844	33	6.268	13	6.454		
52	5.901	32	6.277	12	6.464		
51	5.953	31	6.284	11	6.474		

Older Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
71	4.050	51	5.671	31	5.969	11	
70	4.204	50	5.715	30	5.975	10	
69	4.340	49	5.749	29	5.981	9	
68	4.462	48	5.776	28	5.993	8	
67	4.571	47	5.792	27	6.009	7	
66	4.667	46	5.804	26	6.024	6	
65	4.752	45	5.813	25	6.037	5	
64	4.826	44	5.820	24	6.050	4	
63	4.894	43	5.827	23	6.060	3	
62	4.952	42	5.832	22	6.069	2	
61	5.006	41	5.841	21	6.076	1	
60	5.062	40	5.852	20	6.082	0	
59	5.134	39	5.867	19	6.087		
58	5.214	38	5.884	18	6.091		
57	5.298	37	5.901	17	6.094		
56	5.378	36	5.916	16	6.098		
55	5.449	35	5.930	15	6.105		
54	5.514	34	5.943	14	6.114		
53	5.571	33	5.954	13	6.124		
52	5.623	32	5.962	12	6.134		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Seventy-Two Years.

.	Age.	Value.	Age.	Value.	Age.	Value.
55	52	5.357	32	5.664	12	5.821
98	51	5.401	31	5.670	11	5.829
43	50	5.411	30	5.675	10	5.838
71	49	5.473	29	5.681	9	5.842
65	48	5.496	28	5.692	8	5.836
36	47	5.510	27	5.706	7	5.818
76	46	5.521	26	5.720	6	5.782
54	45	5.528	25	5.733	5	5.720
23	44	5.534	24	5.744	4	5.605
34	43	5.539	23	5.754	3	5.458
37	42	5.544	22	5.762	2	5.189
37	41	5.551	21	5.768	1	4.892
38	40	5.561	20	5.773	0	4.290
05	39	5.576	19	5.778		
30	38	5.592	18	5.781		
58	37	5.607	17	5.784		
32	36	5.621	16	5.788		
98	35	5.634	15	5.794		
57	34	5.646	14	5.803		
10	33	5.656	13	5.812		

Older Age Seventy-Three Years.

lue.	Age.	Value.	Age.	Value.	Age.	Value.
97	53	5.071	33	5.386	13	5.529
22	52	5.115	32	5.393	12	5.537
58	51	5.155	31	5.398	11	5.545
95	50	5.192	30	5.403	10	5.553
16	49	5.220	29	5.408	9	5.556
23	48	5.241	28	5.418	8	5.551
17	47	5.254	27	5.432	7	5.533
00	46	5.262	26	5.445	6	5.499
73	45	5.269	25	5.456	5	5.440
36	44	5.273	24	5.467	4	5.331
92	43	5.278	23	5.475	3	5.193
41	42	5.282	22	5.483	2	4.938
36	41	5.288	21	5.489	1	4.658
33	40	5.298	20	5.493	0	4.088
95	39	5.311	19	5.497		
55	38	5.326	18	5.500		
38	37	5.340	17	5.503		
07	36	5.353	16	5.506		
68	35	5.366	15	5.512		
23	34	5.376	14	5.520		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two L
(Carlisle 4 per Cent.)

Older Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
74	3.279	54	4.815	34	5.137	14
73	3.385	53	4.860	33	5.146	13
72	3.505	52	4.900	32	5.152	12
71	3.634	51	4.937	31	5.157	11
70	3.764	50	4.971	30	5.161	10
69	3.878	49	4.996	29	5.166	9
68	3.978	48	5.015	28	5.175	8
67	4.067	47	5.026	27	5.188	7
66	4.144	46	5.033	26	5.201	6
65	4.211	45	5.038	25	5.211	5
64	4.269	44	5.042	24	5.221	4
63	4.322	43	5.046	23	5.229	3
62	4.366	42	5.049	22	5.236	2
61	4.408	41	5.055	21	5.241	1
60	4.451	40	5.064	20	5.245	0
59	4.509	39	5.076	19	5.249	
58	4.574	38	5.090	18	5.251	
57	4.643	37	5.104	17	5.254	
56	4.707	36	5.116	16	5.257	
55	4.764	35	5.128	15	5.262	

Older Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
75	3.119	55	4.598	35	4.933	15
74	3.197	54	4.646	34	4.942	14
73	3.299	53	4.688	33	4.950	13
72	3.413	52	4.725	32	4.956	12
71	3.537	51	4.759	31	4.960	11
70	3.661	50	4.790	30	4.964	10
69	3.769	49	4.813	29	4.968	9
68	3.864	48	4.830	28	4.977	8
67	3.947	47	4.840	27	4.989	7
66	4.020	46	4.846	26	5.001	6
65	4.082	45	4.850	25	5.010	5
64	4.136	44	4.853	24	5.019	4
63	4.185	43	4.856	23	5.027	3
62	4.225	42	4.859	22	5.033	2
61	4.264	41	4.864	21	5.038	1
60	4.304	40	4.872	20	5.042	0
59	4.358	39	4.884	19	5.045	
58	4.420	38	4.898	18	5.047	
57	4.484	37	4.910	17	5.050	
56	4.545	36	4.922	16	5.052	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
76	2.966	56	4.384	36	4.730	16	4.851
75	3.041	55	4.434	35	4.741	15	4.856
74	3.114	54	4.478	34	4.749	14	4.862
73	3.212	53	4.517	33	4.756	13	4.869
72	3.321	52	4.551	32	4.762	12	4.876
71	3.439	51	4.583	31	4.766	11	4.883
70	3.558	50	4.611	30	4.769	10	4.889
69	3.660	49	4.632	29	4.773	9	4.892
68	3.750	48	4.647	28	4.781	8	4.886
67	3.828	47	4.655	27	4.793	7	4.871
66	3.895	46	4.660	26	4.804	6	4.841
65	4.953	45	4.664	25	4.813	5	4.789
64	4.003	44	4.666	24	4.821	4	4.695
63	4.047	43	4.669	23	4.828	3	4.575
62	4.035	42	4.671	22	4.834	2	4.355
61	4.120	41	4.676	21	4.839	1	4.115
60	4.157	40	4.684	20	4.842	0	3.621
59	4.208	39	4.695	19	4.844		
58	4.266	38	4.708	18	4.847		
57	4.327	37	4.720	17	4.849		

Older Age Seventy-Seven Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
77	2.833	57	4.181	37	4.543	17	4.662
76	2.897	56	4.234	36	4.553	16	4.664
75	2.969	55	4.281	35	4.563	15	4.669
74	3.039	54	4.323	34	4.571	14	4.675
73	3.132	53	4.358	33	4.577	13	4.682
72	3.237	52	4.390	32	4.582	12	4.688
71	3.349	51	4.419	31	4.585	11	4.694
70	3.462	50	4.445	30	4.588	10	4.700
69	3.559	49	4.464	29	4.592	9	4.703
68	3.644	48	4.477	28	4.600	8	4.697
67	3.716	47	4.484	27	4.610	7	4.682
66	3.779	46	4.489	26	4.621	6	4.653
65	3.833	45	4.491	25	4.630	5	4.604
64	3.879	44	4.493	24	4.637	4	4.514
63	3.920	43	4.495	23	4.644	3	4.400
62	3.954	42	4.497	22	4.649	2	4.190
61	3.987	41	4.502	21	4.653	1	3.962
60	4.021	40	4.509	20	4.656	0	3.489
59	4.069	39	4.520	19	4.658		
58	4.124	38	4.532	18	4.660		

Value of £1 per Annum during the joint Continuance of Two I
(Carlisle 4 per Cent.)

Older Age Seventy-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
78	2.698	58	3.976	38	4.351	18
77	2.764	57	4.029	37	4.362	17
76	2.824	56	4.080	36	4.371	16
75	2.892	55	4.123	35	4.380	15
74	2.958	54	4.161	34	4.387	14
73	3.047	53	4.194	33	4.394	13
72	3.146	52	4.223	32	4.398	12
71	3.254	51	4.250	31	4.401	11
70	3.361	50	4.274	30	4.403	10
69	3.452	49	4.291	29	4.407	9
68	3.531	48	4.303	28	4.414	8
67	3.599	47	4.309	27	4.424	7
66	3.658	46	4.312	26	4.434	6
65	3.707	45	4.314	25	4.442	5
64	3.749	44	4.315	24	4.449	4
63	3.786	43	4.317	23	4.455	3
62	3.818	42	4.319	22	4.460	2
61	3.847	41	4.323	21	4.464	1
60	3.879	40	4.330	20	4.466	0
59	3.924	39	4.340	19	4.468	

Older Age Seventy-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
79	2.533	59	3.755	39	4.135	19
78	2.613	58	3.803	38	4.146	18
77	2.674	57	3.853	37	4.156	17
76	2.731	56	3.899	36	4.165	16
75	2.795	55	3.940	35	4.173	15
74	2.857	54	3.975	34	4.179	14
73	2.940	53	4.005	33	4.185	13
72	3.035	52	4.031	32	4.189	12
71	3.136	51	4.055	31	4.191	11
70	3.237	50	4.077	30	4.194	10
69	3.322	49	4.092	29	4.196	9
68	3.395	48	4.103	28	4.203	8
67	3.458	47	4.107	27	4.213	7
66	3.511	46	4.110	26	4.222	6
65	3.556	45	4.111	25	4.229	5
64	3.594	44	4.112	24	4.236	4
63	3.628	43	4.114	23	4.241	3
62	3.657	42	4.115	22	4.246	2
61	3.684	41	4.119	21	4.249	1
60	3.713	40	4.126	20	4.251	0

e of £1 per Annum during the joint Continuance of Two Lives
(Carlisle 4 per Cent.)

Older Age Eighty Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
2.390	59	3.597	38	3.956	17	4.057
2.459	58	3.642	37	3·965	16	4.058
.535	57	3.689	36	3.973	15	4.062
.592	56	3.732	35	3.981	14	4.067
.645	55	3.770	34	3.987	13	4.073
.704	54	3.802	33	3.912	12	4.078
.763	53	3.829	32	3.995	11	4.083
.842	52	3.853	31	3.998	10	4.088
.931	51	3.875	30	3.999	9	4.089
.026	50	3.894	29	4.002	8	4.084
.121	49	3.908	28	4.009	7	4.071
.201	48	3.917	27	4.017	6	4.046
.269	47	3.921	26	4.026	5	4.004
.326	46	3.923	25	4.033	4	3.927
.375	45	3.924	24	4.039	3	3.831
.416	44	3.925	23	4.044	2	3.653
.450	43	3.926	22	4.048	1	3.462
.481	42	3.928	21	4.051	0	3.059
.507	41	3.931	20	4.053		
.531	40	3.937	19	4.054		
.558	39	3.946	18	4.056		

Older Age Eighty-One Years.

alue.	Age.	Value.	Age.	Value.	Age.	Value.
.222	60	3.384	39	3.738	18	3.837
.303	59	3.420	38	3.747	17	3.838
.368	58	3.462	37	3.755	16	3.840
.438	57	3.505	36	3.763	15	3.843
.491	56	3.545	35	3.769	14	3.848
.540	55	3.579	34	3.775	13	3.853
.596	54	3.609	33	3.780	12	3.858
.650	53	3.633	32	3.782	11	3.862
.724	52	3.655	31	3.784	10	3.867
.808	51	3.674	30	3.786	9	3.868
.897	50	3.692	29	3.788	8	3.863
.986	49	3.704	28	3.794	7	3.850
.059	48	3.712	27	3.803	6	3.827
.121	47	3.715	26	3.810	5	3.787
.174	46	3.716	25	3.816	4	3.715
.218	45	3.717	24	3.822	3	3.625
.255	44	3.717	23	3.827	2	3.458
.286	43	3.719	22	3.830	1	3.280
.314	42	3.720	21	3.833	0	2.902
.337	41	3.723	20	3.835		
.359	40	3.729	19	3.836		

Value of £1 per Annum during the joint Continuance of Tw
(Carlisle 4 per Cent.)

Older Age Eighty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age
82	2.079	61	3.203	40	3.542	19
81	2.148	60	3.226	39	3.550	18
80	2.225	59	3.260	38	3.558	17
79	2.285	58	3.299	37	3.566	16
78	2.351	57	3.339	36	3.573	15
77	2.400	56	3.376	35	3.579	14
76	2.446	55	3.407	34	3.584	13
75	2.497	54	3.434	33	3.588	12
74	2.548	53	3.456	32	3.590	11
73	2.617	52	3.475	31	3.592	10
72	2.696	51	3.493	30	3.594	9
71	2.780	50	3.509	29	3.596	8
70	2.862	49	3.520	28	3.601	7
69	2.930	48	3.527	27	3.609	6
68	2.987	47	3.529	26	3.616	5
67	3.035	46	3.530	25	3.622	4
66	3.075	45	3.530	24	3.627	3
65	3.109	44	3.531	23	3.631	2
64	3.137	43	3.532	22	3.634	1
63	3.162	42	3.533	21	3.637	0
62	3.183	41	3.536	20	3.638	

Older Age Eighty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
83	1.929	62	3.021	41	3.343	20
82	2.002	61	3.039	40	3.348	19
81	2.066	60	3.060	39	3.354	18
80	2.137	59	3.091	38	3.363	17
79	2.193	58	3.127	37	3.370	16
78	2.255	57	3.165	36	3.376	15
77	2.300	56	3.199	35	3.382	14
76	2.341	55	3.227	34	3.386	13
75	2.389	54	3.251	33	3.390	12
74	2.436	53	3.271	32	3.392	11
73	2.501	52	3.289	31	3.394	10
72	2.575	51	3.304	30	3.395	9
71	2.653	50	3.319	29	3.397	8
70	2.729	49	3.328	28	3.402	7
69	2.792	48	3.334	27	3.409	6
68	2.844	47	3.336	26	3.416	5
67	2.887	46	3.337	25	3.421	4
66	2.924	45	3.337	24	3.426	3
65	2.954	44	3.338	23	3.430	2
64	2.979	43	3.338	22	3.432	1
63	3.002	42	3.340	21	3.435	0

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Eighty-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.782	62	2.860	40	3.159	18	3.241
1.853	61	2.877	39	3.165	17	3.241
1.921	60	2.896	38	3.173	16	3.242
1.980	59	2.925	37	3.179	15	3.245
2.047	58	2.959	36	3.185	14	3.249
2.099	57	2.994	35	3.190	13	3.253
2.156	56	3.025	34	3.194	12	3.257
2.197	55	3.050	33	3.197	11	3.260
2.235	54	3.072	32	3.199	10	3.264
2.280	53	3.090	31	3.201	9	3.264
2.323	52	3.105	30	3.202	8	3.260
2.384	51	3.120	29	3.204	7	3.249
2.453	50	3.133	28	3.208	6	3.230
2.525	49	3.142	27	3.215	5	3.197
2.596	48	3.147	26	3.221	4	3.138
2.653	47	3.149	25	3.226	3	3.066
2.701	46	3.149	24	3.230	2	2.929
2.740	45	3.149	23	3.234	1	2.786
2.773	44	3.149	22	3.236	0	2.473
2.800	43	3.150	21	3.238		
2.823	42	3.151	20	3.239		
2.843	41	3.154	19	3.240		

Older Age Eighty-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.619	63	2.674	41	2.956	19	3.034
1.698	62	2.689	40	2.961	18	3.035
1.763	61	2.705	39	2.967	17	3.036
1.826	60	2.722	38	2.974	16	3.037
1.881	59	2.749	37	2.980	15	3.039
1.943	58	2.780	36	2.985	14	3.043
1.990	57	2.812	35	2.989	13	3.047
2.043	56	2.840	34	2.993	12	3.050
2.081	55	2.863	33	2.996	11	3.053
2.116	54	2.883	32	2.998	10	3.056
2.157	53	2.899	31	2.999	9	3.057
2.197	52	2.913	30	3.000	8	3.053
2.254	51	2.926	29	3.001	7	3.043
2.317	50	2.938	28	3.006	6	3.024
2.384	49	2.946	27	3.012	5	2.994
2.449	48	2.950	26	3.018	4	2.940
2.501	47	2.952	25	3.022	3	2.873
2.545	46	2.952	24	3.026	2	2.746
2.580	45	2.952	23	3.029	1	2.614
2.610	44	2.952	22	3.031	0	2.323
2.635	43	2.953	21	3.033		
2.655	42	2.954	20	3.034		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Eighty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
86	1.476	64	2.506	42	2.780	20	2.854
85	1.545	63	2.523	41	2.783	19	2.854
84	1.619	62	2.537	40	2.786	18	2.855
83	1.680	61	2.552	39	2.792	17	2.855
82	1.739	60	2.568	38	2.799	16	2.857
81	1.790	59	2.593	37	2.804	15	2.859
80	1.847	58	2.621	36	2.809	14	2.862
79	1.891	57	2.651	35	2.813	13	2.866
78	1.940	56	2.677	34	2.816	12	2.869
77	1.975	55	2.698	33	2.819	11	2.872
76	2.007	54	2.716	32	2.821	10	2.874
75	2.045	53	2.731	31	2.821	9	2.875
74	2.083	52	2.744	30	2.822	8	2.871
73	2.135	51	2.755	29	2.824	7	2.861
72	2.194	50	2.766	28	2.828	6	2.844
71	2.257	49	2.773	27	2.834	5	2.816
70	2.317	48	2.777	26	2.839	4	2.765
69	2.365	47	2.779	25	2.843	3	2.703
68	2.405	46	2.779	24	2.847	2	2.585
67	2.437	45	2.779	23	2.849	1	2.462
66	2.465	44	2.779	22	2.851	0	2.190
65	2.487	43	2.779	21	2.853		

Older Age Eighty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
87	1.359	65	2.365	43	2.637	21	2.706
86	1.416	64	2.383	42	2.638	20	2.706
85	1.481	63	2.399	41	2.640	19	2.707
84	1.551	62	2.412	40	2.644	18	2.708
83	1.609	61	2.425	39	2.649	17	2.708
82	1.664	60	2.440	38	2.655	16	2.709
81	1.712	59	2.464	37	2.660	15	2.711
80	1.766	58	2.491	36	2.665	14	2.715
79	1.807	57	2.518	35	2.669	13	2.718
78	1.853	56	2.542	34	2.672	12	2.721
77	1.885	55	2.562	33	2.674	11	2.723
76	1.916	54	2.579	32	2.676	10	2.726
75	1.952	53	2.592	31	2.677	9	2.726
74	1.987	52	2.604	30	2.677	8	2.722
73	2.036	51	2.615	29	2.679	7	2.713
72	2.092	50	2.625	28	2.683	6	2.697
71	2.151	49	2.632	27	2.688	5	2.671
70	2.207	48	2.636	26	2.693	4	2.623
69	2.252	47	2.637	25	2.697	3	2.564
68	2.289	46	2.637	24	2.700	2	2.453
67	2.319	45	2.637	23	2.702	1	2.338
66	2.344	44	2.637	22	2.704	0	2.081

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.301	65	2.293	42	2.552	19	2.618
87	1.329	64	2.310	41	2.554	18	2.619
86	1.384	63	2.325	40	2.558	17	2.619
85	1.447	62	2.338	39	2.563	16	2.620
84	1.514	61	2.350	38	2.569	15	2.622
83	1.569	60	2.365	37	2.574	14	2.625
82	1.622	59	2.387	36	2.578	13	2.628
81	1.667	58	2.413	35	2.581	12	2.631
80	1.719	57	2.439	34	2.584	11	2.633
79	1.759	56	2.462	33	2.587	10	2.636
78	1.803	55	2.480	32	2.588	9	2.636
77	1.834	54	2.496	31	2.589	8	2.632
76	1.863	53	2.509	30	2.590	7	2.624
75	1.897	52	2.521	29	2.591	6	2.608
74	1.931	51	2.531	28	2.595	5	2.583
73	1.979	50	2.541	27	2.600	4	2.537
72	2.032	49	2.547	26	2.605	3	2.481
71	2.089	48	2.551	25	2.608	2	2.374
70	2.143	47	2.551	24	2.611	1	2.264
69	2.185	46	2.551	23	2.614	0	2.017
68	2.220	45	2.551	22	2.615		
67	2.249	44	2.551	21	2.617		
66	2.273	43	2.552	20	2.617		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.223	66	2.187	43	2.452	20	2.514
88	1.260	65	2.207	42	2.453	19	2.515
87	1.287	64	2.223	41	2.455	18	2.516
86	1.339	63	2.237	40	2.458	17	2.516
85	1.400	62	2.249	39	2.463	16	2.517
84	1.464	61	2.261	38	2.468	15	2.519
83	1.516	60	2.275	37	2.473	14	2.522
82	1.566	59	2.296	36	2.477	13	2.525
81	1.610	58	2.320	35	2.480	12	2.527
80	1.659	57	2.345	34	2.483	11	2.530
79	1.697	56	2.367	33	2.485	10	2.532
78	1.739	55	2.385	32	2.487	9	2.532
77	1.769	54	2.400	31	2.487	8	2.529
76	1.797	53	2.412	30	2.488	7	2.520
75	1.829	52	2.423	29	2.490	6	2.506
74	1.862	51	2.433	28	2.493	5	2.482
73	1.907	50	2.442	27	2.498	4	2.438
72	1.958	49	2.448	26	2.503	3	2.384
71	2.012	48	2.451	25	2.506	2	2.282
70	2.063	47	2.452	24	2.509	1	2.177
69	2.103	46	2.452	23	2.511	0	1.941
68	2.137	45	2.452	22	2.513		
67	2.164	44	2.452	21	2.514		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Ninety Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
90	1.066	67	2.028	44	2.299	21	2.357
89	1.142	66	2.050	43	2.299	20	2.358
88	1.176	65	2.069	42	2.299	19	2.358
87	1.201	64	2.084	41	2.301	18	2.359
86	1.250	63	2.098	40	2.304	17	2.359
85	1.307	62	2.109	39	2.309	16	2.360
84	1.367	61	2.120	38	2.314	15	2.361
83	1.416	60	2.132	37	2.318	14	2.364
82	1.463	59	2.152	36	2.322	13	2.367
81	1.504	58	2.175	35	2.325	12	2.369
80	1.551	57	2.198	34	2.328	11	2.372
79	1.587	56	2.219	33	2.330	10	2.374
78	1.627	55	2.236	32	2.331	9	2.374
77	1.655	54	2.250	31	2.332	8	2.371
76	1.681	53	2.262	30	2.333	7	2.363
75	1.712	52	2.272	29	2.334	6	2.349
74	1.743	51	2.281	28	2.338	5	2.327
73	1.786	50	2.290	27	2.342	4	2.285
72	1.834	49	2.296	26	2.346	3	2.235
71	1.884	48	2.299	25	2.349	2	2.139
70	1.932	47	2.299	24	2.352	1	2.040
69	1.970	46	2.299	23	2.354	0	1.818
68	2.002	45	2.299	22	2.356		

Older Age Ninety-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
91	1.028	68	1.985	45	2.281	22	2.338
90	1.047	67	2.012	44	2.281	21	2.339
89	1.120	66	2.034	43	2.281	20	2.340
88	1.155	65	2.052	42	2.282	19	2.340
87	1.180	64	2.068	41	2.284	18	2.341
86	1.229	63	2.081	40	2.287	17	2.341
85	1.285	62	2.092	39	2.291	16	2.342
84	1.345	61	2.103	38	2.296	15	2.344
83	1.395	60	2.115	37	2.301	14	2.347
82	1.443	59	2.135	36	2.304	13	2.349
81	1.484	58	2.158	35	2.308	12	2.352
80	1.532	57	2.181	34	2.311	11	2.354
79	1.567	56	2.202	33	2.313	10	2.356
78	1.608	55	2.219	32	2.314	9	2.357
77	1.636	54	2.233	31	2.315	8	2.353
76	1.663	53	2.245	30	2.315	7	2.346
75	1.694	52	2.255	29	2.317	6	2.332
74	1.724	51	2.265	28	2.320	5	2.309
73	1.767	50	2.273	27	2.325	4	2.268
72	1.815	49	2.279	26	2.329	3	2.217
71	1.866	48	2.282	25	2.332	2	2.121
70	1.914	47	2.282	24	2.334	1	2.023
69	1.953	46	2.282	23	2.336	0	1.801

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
2	1.096	72	1.886	52	2.345	32	2.405	12	2.444
1	1.061	71	1.939	51	2.355	31	2.406	11	2.446
0	1.079	70	1.991	50	2.364	30	2.406	10	2.449
9	1.155	69	2.031	49	2.369	29	2.407	9	2.449
8	1.191	68	2.065	48	2.372	28	2.411	8	2.445
7	1.218	67	2.093	47	2.372	27	2.416	7	2.437
6	1.269	66	2.116	46	2.372	26	2.420	6	2.423
5	1.329	65	2.135	45	2.371	25	2.423	5	2.399
	1.392	64	2.151	44	2.371	24	2.426	4	2.356
	1.445	63	2.165	43	2.371	23	2.428	3	2.303
	1.495	62	2.176	42	2.374	22	2.430	2	2.203
	1.539	61	2.187	41	2.373	21	2.431	1	2.099
	1.589	60	2.199	40	2.376	20	2.432	0	1.869
	1.627	59	2.220	39	2.381	19	2.432		
	1.669	58	2.243	38	2.386	18	2.433		
	1.699	57	2.268	37	2.391	17	2.433		
	1.727	56	2.289	36	2.395	16	2.434		
	1.760	55	2.307	35	2.399	15	2.436		
	1.791	54	2.322	34	2.401	14	2.438		
	1.836	53	2.334	33	2.404	13	2.441		

Older Age Ninety-Three Years.

	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	1.199	73	1.924	53	2.440	33	2.509	13	2.548
	1.146	72	1.976	52	2.451	32	2.511	12	2.550
	1.108	71	2.032	51	2.461	31	2.511	11	2.553
	1.127	70	2.086	50	2.469	30	2.512	10	2.555
	1.206	69	2.128	49	2.474	29	2.513	9	2.556
	1.245	68	2.164	48	2.477	28	2.517	8	2.552
	1.273	67	2.192	47	2.477	27	2.521	7	2.544
	1.327	66	2.216	46	2.476	26	2.526	6	2.529
	1.390	65	2.235	45	2.476	25	2.529	5	2.504
	1.457	64	2.251	44	2.475	24	2.532	4	2.458
	1.513	63	2.265	43	2.475	23	2.535	3	2.403
	1.566	62	2.276	42	2.476	22	2.536	2	2.298
	1.613	61	2.287	41	2.477	21	2.538	1	2.190
	1.665	60	2.300	40	2.481	20	2.538	0	1.949
	1.705	59	2.321	39	2.486	19	2.538		
	1.750	58	2.345	38	2.492	18	2.539		
	1.781	57	2.371	37	2.496	17	2.539		
	1.810	56	2.393	36	2.501	16	2.540		
	1.844	55	2.412	35	2.504	15	2.542		
	1.877	54	2.427	34	2.507	14	2.545		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.273	74	1.930	54	2.482	34	2.559	14	2.596
93	1.234	73	1.978	53	2.494	33	2.561	13	2.599
92	1.179	72	2.031	52	2.505	32	2.562	12	2.602
91	1.139	71	2.088	51	2.514	31	2.563	11	2.604
90	1.158	70	2.142	50	2.522	30	2.563	10	2.606
89	1.240	69	2.186	49	2.527	29	2.564	9	2.607
88	1.280	68	2.221	48	2.529	28	2.568	8	2.603
87	1.310	67	2.250	47	2.529	27	2.573	7	2.594
86	1.367	66	2.273	46	2.528	26	2.577	6	2.579
85	1.432	65	2.291	45	2.527	25	2.581	5	2.553
84	1.502	64	2.306	44	2.526	24	2.585	4	2.507
83	1.559	63	2.319	43	2.526	23	2.586	3	2.451
82	1.614	62	2.330	42	2.527	22	2.588	2	2.342
81	1.662	61	2.340	41	2.529	21	2.589	1	2.234
80	1.716	60	2.353	40	2.532	20	2.589	0	1.989
79	1.756	59	2.375	39	2.538	19	2.589		
78	1.801	58	2.400	38	2.543	18	2.590		
77	1.833	57	2.425	37	2.548	17	2.590		
76	1.862	56	2.448	36	2.552	16	2.591		
75	1.897	55	2.466	35	2.556	15	2.593		

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.353	75	1.941	55	2.501	35	2.585	15	2.619
94	1.311	74	1.975	54	2.515	34	2.587	14	2.623
93	1.270	73	2.022	53	2.527	33	2.589	13	2.626
92	1.212	72	2.076	52	2.536	32	2.590	12	2.628
91	1.172	71	2.132	51	2.545	31	2.590	11	2.631
90	1.191	70	2.187	50	2.552	30	2.591	10	2.633
89	1.276	69	2.230	49	2.557	29	2.592	9	2.633
88	1.318	68	2.264	48	2.559	28	2.595	8	2.629
87	1.350	67	2.292	47	2.558	27	2.600	7	2.620
86	1.408	66	2.313	46	2.557	26	2.605	6	2.605
85	1.475	65	2.330	45	2.556	25	2.608	5	2.579
84	1.546	64	2.344	44	2.555	24	2.611	4	2.532
83	1.605	63	2.356	43	2.555	23	2.613	3	2.476
82	1.661	62	2.366	42	2.556	22	2.615	2	2.370
81	1.709	61	2.376	41	2.558	21	2.616	1	2.260
80	1.762	60	2.389	40	2.561	20	2.616	0	2.014
79	1.803	59	2.410	39	2.567	19	2.616		
78	1.848	58	2.435	38	2.572	18	2.617		
77	1.879	57	2.460	37	2.577	17	2.617		
76	1.908	56	2.482	36	2.581	16	2.617		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Ninety-Six Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.394	76	1.912	56	2.454	36	2.542	16	2.575
1.371	75	1.944	55	2.471	35	2.546	15	2.577
1.325	74	1.975	54	2.484	34	2.548	14	2.580
1.283	73	2.022	53	2.494	33	2.549	13	2.583
1.225	72	2.074	52	2.502	32	2.550	12	2.586
1.185	71	2.129	51	2.510	31	2.550	11	2.588
1.206	70	2.181	50	2.516	30	2.551	10	2.590
1.292	69	2.221	49	2.520	29	2.552	9	2.590
1.336	68	2.253	48	2.522	28	2.555	8	2.583
1.368	67	2.278	47	2.521	27	2.560	7	2.577
1.427	66	2.297	46	2.519	26	2.564	6	2.562
1.494	65	2.311	45	2.518	25	2.568	5	2.537
1.564	64	2.323	44	2.517	24	2.570	4	2.492
1.621	63	2.334	43	2.517	23	2.572	3	2.438
1.676	62	2.343	42	2.518	22	2.573	2	2.334
1.722	61	2.352	41	2.520	21	2.574	1	2.228
1.774	60	2.364	40	2.523	20	2.574	0	1.989
1.813	59	2.384	39	2.529	19	2.574		
1.856	58	2.408	38	2.534	18	2.574		
1.885	57	2.433	37	2.539	17	2.575		

Older Age Ninety-Seven Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.366	77	1.832	57	2.324	37	2.415	17	2.445
1.376	76	1.856	56	2.343	36	2.418	16	2.446
1.348	75	1.885	55	2.357	35	2.421	15	2.448
1.302	74	1.914	54	2.368	34	2.422	14	2.451
1.261	73	1.957	53	2.376	33	2.424	13	2.453
1.205	72	2.005	52	2.383	32	2.424	12	2.456
1.167	71	2.056	51	2.389	31	2.424	11	2.458
1.189	70	2.104	50	2.395	30	2.424	10	2.459
1.276	69	2.140	49	2.398	29	2.425	9	2.459
1.319	68	2.167	48	2.399	28	2.428	8	2.455
1.350	67	2.187	47	2.398	27	2.433	7	2.447
1.407	66	2.203	46	2.397	26	2.437	6	2.432
1.471	65	2.215	45	2.395	25	2.440	5	2.409
1.537	64	2.225	44	2.394	24	2.442	4	2.367
1.591	63	2.234	43	2.395	23	2.444	3	2.317
1.642	62	2.242	42	2.395	22	2.444	2	2.221
1.684	61	2.250	41	2.397	21	2.445	1	2.124
1.732	60	2.261	40	2.401	20	2.445	0	1.899
1.767	59	2.280	39	2.406	19	2.445		
1.806	58	2.302	38	2.411	18	2.445		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
98	1.349	78	1.745	58	2.174	38	2.264	18	2
97	1.350	77	1.767	57	2.194	37	2.268	17	2
96	1.331	76	1.787	56	2.210	36	2.270	16	2
95	1.321	75	1.813	55	2.221	35	2.272	15	2
94	1.276	74	1.838	54	2.230	34	2.274	14	2
93	1.238	73	1.878	53	2.236	33	2.275	13	2
92	1.185	72	1.922	52	2.241	32	2.275	12	2
91	1.150	71	1.967	51	2.246	31	2.275	11	2
90	1.174	70	2.009	50	2.251	30	2.275	10	2
89	1.261	69	2.039	49	2.254	29	2.276	9	2
88	1.304	68	2.061	48	2.254	28	2.279	8	2
87	1.332	67	2.076	47	2.253	27	2.283	7	2
86	1.384	66	2.089	46	2.251	26	2.287	6	2
85	1.444	65	2.098	45	2.250	25	2.289	5	2
84	1.506	64	2.106	44	2.249	24	2.291	4	2
83	1.555	63	2.114	43	2.250	23	2.292	3	2
82	1.600	62	2.121	42	2.250	22	2.292	2	2
81	1.637	61	2.128	41	2.252	21	2.293	1	2
80	1.680	60	2.137	40	2.255	20	2.292	0	1
79	1.710	59	2.154	39	2.260	19	2.292		

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
99	1.272	79	1.591	59	1.949	39	2.031	19	2
98	1.298	78	1.620	58	1.966	38	2.034	18	2
97	1.285	77	1.637	57	1.981	37	2.037	17	2
96	1.281	76	1.653	56	1.994	36	2.039	16	2
95	1.253	75	1.675	55	2.002	35	2.040	15	2
94	1.212	74	1.696	54	2.008	34	2.041	14	2
93	1.179	73	1.729	53	2.012	33	2.042	13	2
92	1.131	72	1.767	52	2.016	32	2.042	12	2
91	1.101	71	1.804	51	2.020	31	2.042	11	2
90	1.128	70	1.838	50	2.024	30	2.042	10	2
89	1.212	69	1.861	49	2.026	29	2.043	9	2
88	1.250	68	1.876	48	2.026	28	2.045	8	2
87	1.272	67	1.887	47	2.024	27	2.049	7	2
86	1.317	66	1.896	46	2.023	26	2.052	6	2
85	1.370	65	1.904	45	2.022	25	2.054	5	2
84	1.424	64	1.910	44	2.022	24	2.055	4	1
83	1.465	63	1.916	43	2.022	23	2.055	3	1
82	1.502	62	1.921	42	2.023	22	2.056	2	1
81	1.532	61	1.927	41	2.024	21	2.056	1	1
80	1.567	60	1.934	40	2.027	20	2.056	0	1

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4 per Cent.)

Older Age One Hundred Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
.976	79	1.311	58	1.572	37	1.619	16	1.682
1.099	78	1.331	57	1.583	36	1.620	15	1.633
1.100	77	1.342	56	1.591	35	1.621	14	1.635
1.081	76	1.353	55	1.596	34	1.622	13	1.636
1.077	75	1.369	54	1.600	33	1.622	12	1.637
1.055	74	1.385	53	1.603	32	1.622	11	1.638
1.023	73	1.410	52	1.605	31	1.622	10	1.639
0.997	72	1.437	51	1.608	30	1.622	9	1.638
0.960	71	1.464	50	1.611	29	1.623	8	1.635
0.938	70	1.487	49	1.611	28	1.625	7	1.630
0.964	69	1.501	48	1.611	27	1.628	6	1.622
1.036	68	1.511	47	1.610	26	1.629	5	1.609
1.063	67	1.518	46	1.609	25	1.630	4	1.584
1.076	66	1.523	45	1.608	24	1.631	3	1.558
1.111	65	1.528	44	1.608	23	1.631	2	1.502
1.152	64	1.532	43	1.609	22	1.632	1	1.451
1.193	63	1.537	42	1.609	21	1.632	0	1.314
1.222	62	1.540	41	1.610	20	1.632		
1.247	61	1.544	40	1.612	19	1.632		
1.268	60	1.549	39	1.615	18	1.632		
1.294	59	1.560	38	1.618	17	1.632		

Older Age One Hundred and One Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
.679	80	.988	59	1.155	38	1.189	17	1.197
.797	79	.998	58	1.162	37	1.190	16	1.198
.872	78	1.011	57	1.169	36	1.190	15	1.198
.858	77	1.017	56	1.173	35	1.191	14	1.199
.840	76	1.024	55	1.176	34	1.191	13	1.200
.839	75	1.035	54	1.178	33	1.191	12	1.201
.824	74	1.045	53	1.180	32	1.191	11	1.201
.800	73	1.062	52	1.181	31	1.191	10	1.202
.783	72	1.080	51	1.183	30	1.191	9	1.201
.757	71	1.097	50	1.185	29	1.192	8	1.199
.743	70	1.111	49	1.185	28	1.193	7	1.195
.765	69	1.118	48	1.185	27	1.195	6	1.190
.821	68	1.123	47	1.184	26	1.196	5	1.181
.836	67	1.127	46	1.183	25	1.196	4	1.165
.842	66	1.131	45	1.183	24	1.197	3	1.148
.867	65	1.134	44	1.183	23	1.197	2	1.110
.896	64	1.136	43	1.183	22	1.197	1	1.077
.924	63	1.139	42	1.183	21	1.197	0	.982
.941	62	1.141	41	1.184	20	1.197		
.957	61	1.143	40	1.185	19	1.197		
.970	60	1.147	39	1.187	18	1.197		

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 4 per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.
102	.383	81	.637	60	.730	39	.750	18
101	.491	80	.647	59	.734	38	.751	17
100	.552	79	.652	58	.738	37	.752	16
99	.590	78	.659	57	.742	36	.752	15
98	.572	77	.662	56	.744	35	.752	14
97	.562	76	.666	55	.745	34	.752	13
96	.564	75	.672	54	.746	33	.752	12
95	.553	74	.677	53	.747	32	.752	11
94	.539	73	.687	52	.747	31	.752	10
93	.530	72	.696	51	.748	30	.752	9
92	.514	71	.705	50	.749	29	.753	8
91	.507	70	.712	49	.749	28	.753	7
90	.524	69	.715	48	.749	27	.754	6
89	.560	68	.718	47	.748	26	.755	5
88	.563	67	.720	46	.748	25	.755	4
87	.565	66	.722	45	.748	24	.755	3
86	.582	65	.723	44	.748	23	.755	2
85	.599	64	.724	43	.748	22	.755	1
84	.614	63	.726	42	.748	21	.755	0
83	.622	62	.727	41	.749	20	.755	
82	,631	61	.728	40	.749	19	.755	

Older Age One Hundred and Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.
103	.107	82	.275	61	.309	40	.316	19
102	.192	81	.278	60	.310	39	.317	18
101	.229	80	.282	59	.312	38	.317	17
100	.249	79	.283	58	.313	37	.317	16
99	.262	78	.286	57	.314	36	.317	15
98	.252	77	.286	56	.314	35	.317	14
97	.249	76	.288	55	.315	34	.317	13
96	.251	75	.290	54	.315	33	.317	12
95	.246	74	.292	53	.315	32	.317	11
94	.240	73	.295	52	.316	31	.317	10
93	.237	72	.299	51	.316	30	.317	9
92	.231	71	.302	50	.316	29	.317	8
91	.229	70	.304	49	.316	28	.318	7
90	.237	69	.305	48	.316	27	.318	6
89	.252	68	.306	47	.316	26	.318	5
88	.250	67	.306	46	.316	25	.318	4
87	.251	66	.307	45	.316	24	.318	3
86	.259	65	.307	44	.316	23	.318	2
85	.264	64	.308	43	.316	22	.318	1
84	.270	63	.308	42	.316	21	.318	0
83	.272	62	.309	41	.316	20	.318	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age 0 Years.

Age.	Value.
0	7.704

Older Age One Year.

Age.	Value.
1	10.299
0	8.493

Older Age Two Years.

Age.	Value.
2	11.793
1	10.772
0	9.173

Older Age Three Years.

Age.	Value.
3	13.162
2	12.217
1	11.362
0	9.742

Older Age Four Years.

Age.	Value.
4	13.932
3	13.422
2	12.575
1	11.769
0	10.202

Older Age Five Years.

Age.	Value.
5	14.507
4	14.087
3	13.638
2	12.858
1	12.092
0	10.551

Older Age Six Years.

Value.	Age.	Value.
14.789	2	13.096
14.574	1	12.331
14.212	0	10.597
13.809		

Older Age Seven Years.

Age.	Value.	Age	Value.
7	14.917	3	13.936
6	14.798	2	13.258
5	14.619	1	12.336
4	14.306	0	10.629

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age Eight Years.				Older Age Nine Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	14.942	3	14.019	9	14.898	4	14.402
7	14.891	2	13.232	8	14.895	3	13.972
6	14.796	1	12.333	7	14.859	2	13.202
5	14.647	0	10.649	6	14.785	1	12.322
4	14.369			5	14.659	0	10.666

Older Age Ten Years.				Older Age Eleven Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
10	14.803	4	14.342	11	14.684	5	14.584
9	14.839	3	13.923	10	14.741	4	14.282
8	14.846	2	13.168	9	14.780	3	13.873
7	14.823	1	12.303	8	14.796	2	13.130
6	14.763	0	10.649	7	14.782	1	12.275
5	14.649			6	14.731	0	10.602

Older Age Twelve Years.				Older Age Thirteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
12	14.568	5	14.519	13	14.450	6	14.604
11	14.611	4	14.223	12	14.500	5	14.436
10	14.649	3	13.822	11	14.550	4	14.164
9	14.683	2	13.087	10	14.597	3	13.769
8	14.712	1	12.221	9	14.644	2	13.033
7	14.736	0	10.555	8	14.659	1	12.168
6	14.667			7	14.676	0	10.510

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

ge Fourteen Years.			Older Age Fifteen Years.			
ue.	Age.	Value.	Age.	Value.	Age.	Value.
331	6	14.542	15	14.215	7	14.554
385	5	14.395	14	14.270	6	14.480
439	4	14.106	13	14.326	5	14.334
494	3	13.715	12	14.383	4	14.055
550	2	12.978	11	14.441	3	13.660
506	1	12.116	10	14.500	2	12.923
633	0	10.465	9	14.554	1	12.064
515			8	14.576	0	10.421

ge Sixteen Years.			Older Age Seventeen Years.			
ue.	Age.	Value.	Age.	Value.	Age.	Value.
112	7	14.493	17	14.018	8	14.412
166	6	14.419	16	14.072	7	14.432
221	5	14.284	15	14.125	6	14.369
276	4	14.001	14	14.178	5	14.231
332	3	13.604	13	14.231	4	13.944
389	2	12.868	12	14.284	3	13.546
452	1	12.013	11	14.323	2	12.812
500	0	10.386	10	14.357	1	11.971
517			9	14.387	0	10.346

ge Eighteen Years.			Older Age Nineteen Years.			
ue.	Age.	Value.	Age.	Value.	Age.	Value.
925	8	14.395	19	13.827	9	14.321
979	7	14.379	18	13.881	8	14.338
031	6	14.315	17	13.932	7	14.322
081	5	14.174	16	13.980	6	14.256
130	4	13.885	15	14.026	5	14.113
178	3	13.487	14	14.069	4	13.823
224	2	12.764	13	14.119	3	13.432
269	1	11.925	12	14.169	2	12.712
313	0	10.305	11	14.219	1	11.876
355			10	14.270	0	10.261

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
20	13.724	14	14.009	8	14.276	2	12.
19	13.778	13	14.061	7	14.260	1	11.
18	13.829	12	14.113	6	14.193	0	10.
17	13.876	11	14.166	5	14.049		
16	13.919	10	14.221	4	13.761		
15	13.959	9	14.259	3	13.373		

Older Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
21	13.616	15	13.902	9	14.193	3	13.
20	13.672	14	13.952	8	14.210	2	12.
19	13.724	13	14.003	7	14.193	1	11.
18	13.771	12	14.054	6	14.126	0	10.
17	13.814	11	14.106	5	13.979		
16	13.853	10	14.152	4	13.696		

Older Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
22	13.497	16	13.795	10	14.054	4	13
21	13.556	15	13.843	9	14.081	3	13
20	13.610	14	13.892	8	14.104	2	12
19	13.660	13	13.939	7	14.122	1	11
18	13.705	12	13.987	6	14.048	0	10
17	13.746	11	14.023	5	13.906		

Older Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
23	13.372	16	13.732	9	14.027	2	1
22	13.433	15	13.777	8	14.065	1	1
21	13.491	14	13.821	7	14.037	0	1
20	13.543	13	13.864	6	13.969		
19	13.592	12	13.906	5	13.831		
18	13.636	11	13.948	4	13.553		
17	13.685	10	13.988	3	13.170		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	13.240	17	13.614	10	13.923	3	13.083
23	13.303	16	13.658	9	13.971	2	12.376
22	13.363	15	13.699	8	13.975	1	11.565
21	13.419	14	13.737	7	13.952	0	9.998
20	13.471	13	13.782	6	13.888		
19	13.520	12	13.829	5	13.753		
18	13.568	11	13.875	4	13.476		

Older Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	13.101	18	13.492	11	13.799	4	13.386
24	13.165	17	13.534	10	13.850	3	12.997
23	13.227	16	13.573	9	13.880	2	12.299
22	13.287	15	13.608	8	13.886	1	11.496
21	13.344	14	13.654	7	13.867	0	9.940
20	13.398	13	13.701	6	13.806		
19	13.447	12	13.749	5	13.672		

Older Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	12.960	19	13.369	12	13.668	5	13.584
25	13.025	18	13.411	11	13.716	4	13.296
24	13.089	17	13.449	10	13.765	3	12.913
23	13.151	16	13.483	9	13.791	2	12.223
22	13.212	15	13.528	8	13.797	1	11.426
21	13.272	14	13.574	7	13.782	0	9.877
20	13.322	13	13.620	6	13.723		

Older Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	12.811	20	13.238	13	13.535	6	13.640
26	12.876	19	13.283	12	13.579	5	13.496
25	12.942	18	13.323	11	13.611	4	13.207
24	13.007	17	13.359	10	13.638	3	12.829
23	13.072	16	13.403	9	13.662	2	12.146
22	13.137	15	13.447	8	13.682	1	11.357
21	13.190	14	13.491	7	13.697	0	9.814

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Twenty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
28	12.663	20	13.153	12	13.480	4	13.120
27	12.729	19	13.196	11	13.518	3	12.746
26	12.796	18	13.235	10	13.554	2	12.077
25	12.863	17	13.279	9	13.589	1	11.287
24	12.931	16	13.321	8	13.623	0	9.751
23	13.000	15	13.363	7	13.619		
22	13.055	14	13.403	6	13.555		
21	13.106	13	13.442	5	13.408		

Older Age Twenty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
29	12.530	21	13.027	13	13.353	5	13.319
28	12.596	20	13.074	12	13.395	4	13.033
27	12.663	19	13.117	11	13.438	3	12.676
26	12.730	18	13.160	10	13.481	2	12.004
25	12.798	17	13.202	9	13.525	1	11.214
24	12.867	16	13.241	8	13.549	0	9.687
23	12.924	15	13.277	7	13.538		
22	12.977	14	13.312	6	13.468		

Older Age Thirty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
30	12.419	22	12.908	14	13.237	6	13.378
29	12.485	21	12.959	13	13.279	5	13.229
28	12.550	20	13.008	12	13.324	4	12.960
27	12.615	19	13.052	11	13.369	3	12.601
26	12.679	18	13.092	10	13.416	2	11.928
25	12.742	17	13.130	9	13.451	1	11.140
24	12.800	16	13.164	8	13.470	0	9.623
23	12.855	15	13.195	7	13.453		

Older Age Thirty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
31	12.308	23	12.787	15	13.123	7	13.364
30	12.374	22	12.842	14	13.165	6	13.287
29	12.438	21	12.896	13	13.207	5	13.149
28	12.499	20	12.941	12	13.251	4	12.882
27	12.558	19	12.982	11	13.295	3	12.521
26	12.615	18	13.020	10	13.336	2	11.849
25	12.673	17	13.053	9	13.370	1	11.064
24	12.731	16	13.083	8	13.386	0	9.565

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Thirty-Two Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
191	23	12.717	14	13.092	5	13.063
257	22	12.776	13	13.132	4	12.798
319	21	12.823	12	13.172	3	12.437
377	20	12.866	11	13.200	2	11.766
431	19	12.906	10	13.224	1	10.989
482	18	12.941	9	13.243	0	9.503
541	17	12.973	8	13.259		
599	16	13.013	7	13.271		
658	15	13.052	6	13.198		

Older Age Thirty-Three Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
064	24	12.585	15	12.971	6	13.104
.130	23	12.648	14	13.007	5	12.973
.191	22	12.697	13	13.042	4	12.708
.247	21	12.743	12	13.076	3	12.347
.298	20	12.785	11	13.109	2	11.678
.344	19	12.823	10	13.141	1	10.911
.403	18	12.857	9	13.172	0	9.438
.463	17	12.896	8	13.202		
.524	16	12.934	7	13.173		

Older Age Thirty-Four Years.

ue.	Age.	Value.	Age.	Value.	Age.	Value.
.926	25	12.448	16	12.842	7	13.072
.993	24	12.510	15	12.875	6	13.007
.055	23	12.561	14	12.905	5	12.876
.112	22	12.609	13	12.942	4	12.613
.163	21	12.653	12	12.979	3	12.246
.208	20	12.695	11	13.017	2	11.587
.267	19	12.733	10	13.056	1	10.830
.326	18	12.772	9	13.096	0	9.369
.387	17	12.808	8	13.096		

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 5 per Cent.)

Older Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
35	11.780	26	12.309	17	12.709	8
34	11.850	25	12.365	16	12.738	7
33	11.915	24	12.416	15	12.765	6
32	11.974	23	12.466	14	12.802	5
31	12.029	22	12.513	13	12.840	4
30	12.078	21	12.559	12	12.880	3
29	12.136	20	12.602	11	12.921	2
28	12.194	19	12.641	10	12.963	1
27	12.252	18	12.676	9	12.984	0

Older Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
36	11.627	26	12.214	16	12.626	6
35	11.699	25	12.266	15	12.662	5
34	11.767	24	12.316	14	12.698	4
33	11.830	23	12.366	13	12.736	3
32	11.889	22	12.416	12	12.774	2
31	11.944	21	12.464	11	12.814	1
30	12.002	20	12.503	10	12.847	0
29	12.058	19	12.539	9	12.871	
28	12.112	18	12.572	8	12.879	
27	12.164	17	12.601	7	12.860	

Older Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
37	11.470	27	12.058	17	12.489	7
36	11.543	26	12.110	16	12.524	6
35	11.614	25	12.161	15	12.558	5
34	11.681	24	12.214	14	12.593	4
33	11.745	23	12.266	13	12.629	3
32	11.806	22	12.319	12	12.664	2
31	11.863	21	12.360	11	12.688	1
30	11.917	20	12.398	10	12.709	0
29	11.967	19	12.432	9	12.726	
28	12.014	18	12.462	8	12.740	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Thirty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
38	11.309	28	11.900	18	12.350	8	12.654
37	11.383	27	11.951	17	12.384	7	12.635
36	11.456	26	12.004	16	12.417	6	12.562
35	11.526	25	12.058	15	12.449	5	12.424
34	11.595	24	12.113	14	12.480	4	12.167
33	11.661	23	12.169	13	12.511	3	11.827
32	11.718	22	12.212	12	12.541	2	11.196
31	11.770	21	12.252	11	12.570	1	10.460
30	11.818	20	12.288	10	12.599	0	9.045
29	11.861	19	12.321	9	12.627		

Older Age Thirty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
39	11.144	29	11.747	19	12.206	9	12.526
38	11.219	28	11.798	18	12.239	8	12.544
37	11.293	27	11.850	17	12.271	7	12.518
36	11.366	26	11.903	16	12.300	6	12.443
35	11.437	25	11.958	15	12.328	5	12.306
34	11.508	24	12.013	14	12.354	4	12.054
33	11.566	23	12.057	13	12.387	3	11.723
32	11.619	22	12.099	12	12.420	2	11.092
31	11.666	21	12.133	11	12.454	1	10.361
30	11.709	20	12.173	10	12.490	0	8.961

Older Age Forty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
40	10.984	29	11.657	18	12.126	7	12.399
39	11.059	28	11.707	17	12.153	6	12.323
38	11.134	27	11.757	16	12.179	5	12.188
37	11.208	26	11.807	15	12.201	4	11.952
36	11.281	25	11.856	14	12.233	3	11.614
35	11.354	24	11.901	13	12.267	2	10.985
34	11.414	23	11.944	12	12.303	1	10.261
33	11.469	22	11.985	11	12.340	0	8.876
32	11.520	21	12.024	10	12.378		
31	11.566	20	12.062	9	12.422		
30	11.607	19	12.095	8	12.430		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
41	10.839	30	11.523	19	11.988	8	12.311
40	10.914	29	11.571	18	12.015	7	12.277
39	10.989	28	11.618	17	12.040	6	12.201
38	11.062	27	11.663	16	12.061	5	12.087
37	11.133	26	11.706	15	12.092	4	11.843
36	11.204	25	11.751	14	12.124	3	11.501
35	11.266	24	11.795	13	12.158	2	10.876
34	11.323	23	11.838	12	12.192	1	10.160
33	11.377	22	11.881	11	12.228	0	8.804
32	11.428	21	11.923	10	12.279		
31	11.474	20	11.957	9	12.310		

Older Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
42	10.701	31	11.391	20	11.851	9	12.134
41	10.777	30	11.436	19	11.880	8	12.145
40	10.850	29	11.479	18	11.906	7	12.152
39	10.921	28	11.519	17	11.928	6	12.100
38	10.990	27	11.556	16	11.958	5	11.978
37	11.056	26	11.600	15	11.989	4	11.727
36	11.119	25	11.645	14	12.019	3	11.385
35	11.179	24	11.691	13	12.051	2	10.765
34	11.236	23	11.737	12	12.082	1	10.076
33	11.290	22	11.783	11	12.103	0	8.725
32	11.342	21	11.819	10	12.120		

Older Age Forty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
43	10.566	32	11.255	21	11.713	10	12.012
42	10.643	31	11.299	20	11.744	9	12.037
41	10.715	30	11.339	19	11.771	8	12.060
40	10.783	29	11.375	18	11.796	7	12.047
39	10.847	28	11.407	17	11.825	6	11.987
38	10.907	27	11.451	16	11.854	5	11.858
37	10.970	26	11.497	15	11.882	4	11.606
36	11.032	25	11.543	14	11.909	3	11.284
35	11.092	24	11.592	13	11.936	2	10.671
34	11.150	23	11.641	12	11.962	1	9.982
33	11.207	22	11.678	11	11.988	0	8.640

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	10.425	32	11.156	20	11.629	8	11.947
43	10.503	31	11.195	19	11.657	7	11.929
42	10.575	30	11.230	18	11.686	6	11.862
41	10.641	29	11.261	17	11.713	5	11.730
40	10.700	28	11.305	16	11.738	4	11.476
39	10.753	27	11.349	15	11.762	3	11.157
38	10.816	26	11.396	14	11.785	2	10.566
37	10.879	25	11.443	13	11.813	1	9.879
36	10.941	24	11.492	12	11.842	0	8.548
35	11.002	23	11.530	11	11.872		
34	11.063	22	11.566	10	11.903		
33	11.112	21	11.599	9	11.935		

Older Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	10.278	33	11.008	21	11.479	9	11.810
44	10.360	32	11.030	20	11.511	8	11.821
43	10.433	31	11.088	19	11.539	7	11.797
42	10.497	30	11.121	18	11.565	6	11.726
41	10.552	29	11.163	17	11.589	5	11.592
40	10.598	28	11.206	16	11.611	4	11.354
39	10.661	27	11.249	15	11.630	3	11.038
38	10.724	26	11.292	14	11.658	2	11.449
37	10.787	25	11.335	13	11.688	1	9.766
36	10.850	24	11.373	12	11.719	0	8.450
35	10.912	23	11.410	11	11.751		
34	10.962	22	11.445	10	11.785		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	10.119	34	10.849	22	11.319	10	11.644
45	10.206	33	10.894	21	11.356	9	11.671
44	10.282	32	10.936	20	11.384	8	11.680
43	10.347	31	10.974	19	11.410	7	11.652
42	10.401	30	11.016	18	11.433	6	11.578
41	10.444	29	11.056	17	11.454	5	11.451
40	10.507	28	11.095	16	11.472	4	11.218
39	10.569	27	11.133	15	11.499	3	10.905
38	10.630	26	11.170	14	11.527	2	10.320
37	10.690	25	11.208	13	11.556	1	9.644
36	10.750	24	11.245	12	11.586	0	8.351
35	10.801	23	11.282	11	11.617		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Forty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
47	9.947	35	10.681	23	11.147	11	11
46	10.040	34	10.728	22	11.187	10	11
45	10.121	33	10.774	21	11.217	9	11
44	10.189	32	10.817	20	11.244	8	11
43	10.244	31	10.857	19	11.269	7	11
42	10.287	30	10.895	18	11.290	6	11
41	10.349	29	10.930	17	11.309	5	11
40	10.410	28	10.963	16	11.335	4	11
39	10.468	27	10.993	15	11.361	3	10
38	10.524	26	11.035	14	11.387	2	10
37	10.579	25	11.068	13	11.414	1	9
36	10.631	24	11.107	12	11.441	0	8

Older Age Forty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
48	9.756	35	10.548	22	11.036	9	11
47	9.856	34	10.597	21	11.064	8	11
46	9.942	33	10.644	20	11.090	7	11
45	10.015	32	10.683	19	11.114	6	11.
44	10.075	31	10.719	18	11.134	5	11.
43	10.121	30	10.751	17	11.159	4	10
42	10.183	29	10.780	16	11.183	3	10
41	10.242	28	10.805	15	11.206	2	10
40	10.297	27	10.842	14	11.229	1	9
39	10.348	26	10.880	13	11.252	0	8
38	10.396	25	10.920	12	11.274		
37	10.448	24	10.961	11	11.295		
36	10.498	23	11.004	10	11.316		

Older Age Forty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
49	9.535	36	10.348	23	10.833	10	11
48	9.642	35	10.399	22	10.863	9	11
47	9.736	34	10.449	21	10.891	8	11
46	9.816	33	10.488	20	10.916	7	11
45	9.883	32	10.524	19	10.939	6	11
44	9.937	31	10.555	18	10.963	5	10
43	10.000	30	10.583	17	10.985	4	10
42	10.058	29	10.607	16	11.006	3	10
41	10.109	28	10.643	15	11.026	2	9
40	10.155	27	10.680	14	11.044	1	9
39	10.195	26	10.719	13	11.068	0	8
38	10.246	25	10.759	12	11.092		
37	10.297	24	10.801	11	11.118		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	9.291	37	10.136	24	10.613	11	10.924
49	9.406	36	10.187	23	10.643	10	10.953
48	9.507	35	10.238	22	10.672	9	10.963
47	9.597	34	10.278	21	10.700	8	10.956
46	9.673	33	10.315	20	10.727	7	10.926
45	9.737	32	10.348	19	10.750	6	10.868
44	9.802	31	10.378	18	10.771	5	10.763
43	9.860	30	10.404	17	10.790	4	10.531
42	9.909	29	10.439	16	10.807	3	10.227
41	9.951	28	10.474	15	10.822	2	9.680
40	9.984	27	10.509	14	10.845	1	9.061
39	10.034	26	10.545	13	10.870	0	7.865
38	10.085	25	10.581	12	10.896		

Older Age Fifty-One Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	9.023	38	9.912	25	10.375	12	10.683
0	9.145	37	9.961	24	10.406	11	10.710
9	9.256	36	10.009	23	10.437	10	10.731
8	9.355	35	10.050	22	10.468	9	10.748
7	9.443	34	10.088	21	10.498	8	10.744
6	9.519	33	10.123	20	10.521	7	10.718
5	9.588	32	10.156	19	10.542	6	10.663
4	9.648	31	10.186	18	10.560	5	10.544
43	9.697	30	10.219	17	10.576	4	10.323
42	9.737	29	10.252	16	10.589	3	10.029
41	9.766	28	10.283	15	10.611	2	9.496
40	9.815	27	10.314	14	10.634	1	8.893
39	9.864	26	10.344	13	10.658	0	7.710

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	8.751	39	9.688	26	10.130	13	10.441
51	8.880	38	9.733	25	10.162	12	10.464
50	8.999	37	9.776	24	10.194	11	10.477
49	9.107	36	9.817	23	10.227	10	10.487
48	9.205	35	9.855	22	10.261	9	10.494
47	9.292	34	9.893	21	10.285	8	10.499
46	9.366	33	9.928	20	10.307	7	10.500
45	9.429	32	9.962	19	10.326	6	10.427
44	9.480	31	9.993	18	10.342	5	10.320
43	9.520	30	10.023	17	10.356	4	10.108
42	9.548	29	10.051	16	10.377	3	9.823
41	9.596	28	10.076	15	10.398	2	9.304
40	9.643	27	10.100	14	10.419	1	8.699
						0	7.551

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
53	8.474	42	9.376	31	9.788	20	10.086	9	10.
52	8.609	41	9.421	30	9.812	19	10.104	8	10.
51	8.738	40	9.462	29	9.834	18	10.119	7	10
50	8.854	39	9.502	28	9.853	17	10.138	6	10.
49	8.957	38	9.538	27	9.883	16	10.158	5	10
48	9.054	37	9.578	26	9.914	15	10.176	4	9
47	9.133	36	9.617	25	9.947	14	10.195	3	9
46	9.201	35	9.656	24	9.981	13	10.213	2	9
45	9.256	34	9.693	23	10.017	12	10.230	1	8
44	9.298	33	9.730	22	10.042	11	10.247	0	7
43	9.329	32	9.760	21	10.065	10	10.264		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
54	8.192	43	9.151	32	9.547	21	9.837	10	10.
53	8.330	42	9.194	31	9.570	20	9.857	9	10.
52	8.460	41	9.232	30	9.591	19	9.875	8	10.
51	8.581	40	9.265	29	9.608	18	9.893	7	9.
50	8.694	39	9.294	28	9.636	17	9.911	6	9.
49	8.799	38	9.333	27	9.666	16	9.927	5	9.
48	8.884	37	9.372	26	9.698	15	9.942	4	9.
47	8.957	36	9.411	25	9.731	14	9.956	3	9.
46	9.018	35	9.450	24	9.766	13	9.975	2	8.
45	9.067	34	9.490	23	9.792	12	9.995	1	8.
44	9.104	33	9.520	22	9.816	11	10.016	0	7.

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Val
55	7.900	43	8.960	31	9.345	19	9.639	7	9.
54	8.039	42	8.996	30	9.354	18	9.655	6	9.
53	8.171	41	9.024	29	9.391	17	9.669	5	9.
52	8.297	40	9.044	28	9.418	16	9.681	4	9.
51	8.416	39	9.083	27	9.447	15	9.692	3	9.
50	8.528	38	9.121	26	9.475	14	9.711	2	8.
49	8.619	37	9.160	25	9.505	13	9.731	1	8.
48	8.699	36	9.200	24	9.530	12	9.752	0	7.
47	8.768	35	9.240	23	9.554	11	9.775		
46	8.825	34	9.270	22	9.578	10	9.799		
45	8.870	33	9.298	21	9.600	9	9.786		
44	8.919	32	9.323	20	9.621	8	9.767		

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	8.721	32	9.091	20	9.377	8	9.513
43	8.755	31	9.114	19	9.393	7	9.506
42	8.781	30	9.139	18	9.406	6	9.473
41	8.799	29	9.164	17	9.418	5	9.354
40	8.835	28	9.189	16	9.427	4	9.139
39	8.871	27	9.213	15	9.444	3	8.879
38	8.907	26	9.237	14	9.462	2	8.428
37	8.944	25	9.262	13	9.482	1	7.916
36	8.981	24	9.286	12	9.502	0	6.866
35	9.012	23	9.310	11	9.524		
34	9.040	22	9.335	10	9.529		
33	9.067	21	9.359	9	9.520		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	8.472	33	8.829	21	9.106	9	9.264
44	8.508	32	8.855	20	9.122	8	9.266
43	8.533	31	8.879	19	9.136	7	9.265
42	8.549	30	8.901	18	9.148	6	9.220
41	8.583	29	8.922	17	9.158	5	9.096
40	8.617	28	8.942	16	9.174	4	8.892
39	8.650	27	8.960	15	9.190	3	8.648
38	8.683	26	8.984	14	9.207	2	8.216
37	8.716	25	9.008	13	9.225	1	7.708
36	8.746	24	9.034	12	9.243	0	6.682
35	8.775	23	9.060	11	9.252		
34	8.803	22	9.087	10	9.259		

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	8.219	34	8.565	22	8.834	10	9.000
45	8.257	33	8.594	21	8.851	9	9.012
44	8.285	32	8.616	20	8.866	8	9.024
43	8.302	31	8.637	19	8.879	7	9.032
42	8.335	30	8.655	18	8.890	6	8.972
41	8.366	29	8.670	17	8.905	5	8.845
40	8.396	28	8.684	16	8.919	4	8.652
39	8.423	27	8.707	15	8.934	3	8.423
38	8.449	26	8.731	14	8.948	2	8.011
37	8.478	25	8.757	13	8.962	1	7.504
36	8.507	24	8.785	12	8.975	0	6.504
35	8.536	23	8.814	11	8.988		

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 5 per Cent.)

Older Age Fifty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
59	6.705	47	7.968	35	8.310	23	8.571	11	8.740
58	6.832	46	8.011	34	8.341	22	8.589	10	8.757
57	6.962	45	8.044	33	8.363	21	8.605	9	8.774
56	7.096	44	8.066	32	8.383	20	8.620	8	8.811
55	7.234	43	8.099	31	8.400	19	8.633	7	8.799
54	7.375	42	8.128	30	8.415	18	8.647	6	8.729
53	7.486	41	8.153	29	8.427	17	8.660	5	8.603
52	7.589	40	8.175	28	8.449	16	8.672	4	8.421
51	7.684	39	8.194	27	8.472	15	8.684	3	8.224
50	7.771	38	8.222	26	8.497	14	8.694	2	7.806
49	7.851	37	8.251	25	8.523	13	8.709	1	7.305
48	7.915	36	8.280	24	8.551	12	8.724	0	6.332

Older Age Sixty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
60	6.456	47	7.778	34	8.127	21	8.378	8	8.594
59	6.579	46	7.817	33	8.148	20	8.394	7	8.567
58	6.705	45	7.846	32	8.166	19	8.407	6	8.490
57	6.835	44	7.879	31	8.182	18	8.419	5	8.368
56	6.969	43	7.908	30	8.196	17	8.430	4	8.229
55	7.106	42	7.931	29	8.217	16	8.439	3	8.022
54	7.217	41	7.948	28	8.238	15	8.446	2	7.601
53	7.323	40	7.961	27	8.260	14	8.460	1	7.109
52	7.422	39	7.988	26	8.283	13	8.476	0	6.166
51	7.514	38	8.015	25	8.306	12	8.493		
50	7.601	37	8.044	24	8.325	11	8.511		
49	7.670	36	8.074	23	8.344	10	8.530		
48	7.729	35	8.105	22	8.361	9	8.575		

Older Age Sixty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
61	6.257	48	7.567	35	7.920	22	8.165	9	8.369
60	6.376	47	7.614	34	7.941	21	8.184	8	8.372
59	6.495	46	7.652	33	7.960	20	8.197	7	8.334
58	6.616	45	7.688	32	7.978	19	8.209	6	8.256
57	6.738	44	7.717	31	7.995	18	8.219	5	8.178
56	6.860	43	7.739	30	8.014	17	8.226	4	8.030
55	6.969	42	7.755	29	8.033	16	8.233	3	7.815
54	7.075	41	7.763	28	8.052	15	8.246	2	7.397
53	7.177	40	7.788	27	8.071	14	8.260	1	6.917
52	7.275	39	7.814	26	8.090	13	8.275	0	6.032
51	7.370	38	7.841	25	8.109	12	8.291		
50	7.445	37	7.868	24	8.128	11	8.308		
49	7.510	36	7.897	23	8.147	10	8.338		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
62	6.067	42	7.571	22	7.975	2	7.193
61	6.182	41	7.594	21	7.989	1	6.756
60	6.294	40	7.618	20	8.001	0	5.891
59	6.403	39	7.642	19	8.012		
58	6.510	38	7.666	18	8.020		
57	6.615	37	7.691	17	8.026		
56	6.722	36	7.713	16	8.038		
55	6.828	35	7.735	15	8.050		
54	6.934	34	7.756	14	8.063		
53	7.033	33	7.776	13	8.077		
52	7.142	32	7.796	12	8.091		
51	7.222	31	7.814	11	8.098		
50	7.294	30	7.831	10	8.102		
49	7.357	29	7.847	9	8.104		
48	7.412	28	7.861	8	8.104		
47	7.458	27	7.875	7	8.102		
46	7.497	26	7.893	6	8.059		
45	7.528	25	7.913	5	7.978		
44	7.550	24	7.933	4	7.823		
43	7.565	23	7.953	3	7.604		

Older Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
63	5.875	43	7.379	23	7.760	3	7.390
62	5.986	42	7.401	22	7.775	2	7.009
61	6.091	41	7.422	21	7.788	1	6.586
60	6.190	40	7.443	20	7.799	0	5.742
59	6.283	39	7.462	19	7.809		
58	6.370	38	7.481	18	7.816		
57	6.475	37	7.502	17	7.827		
56	6.581	36	7.524	16	7.838		
55	6.689	35	7.546	15	7.849		
54	6.799	34	7.568	14	7.859		
53	6.911	33	7.591	13	7.870		
52	6.996	32	7.608	12	7.880		
51	7.073	31	7.623	11	7.889		
50	7.142	30	7.636	10	7.899		
49	7.203	29	7.648	9	7.907		
48	7.256	28	7.658	8	7.916		
47	7.298	27	7.676	7	7.892		
46	7.332	26	7.695	6	7.850		
45	7.356	25	7.715	5	7.768		
44	7.372	24	7.737	4	7.609		

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 5 per Cent.)

Older Age Sixty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
64	5.669	44	7.175	24	7.532	4	7
63	5.778	43	7.197	23	7.547	3	7
62	5.879	42	7.216	22	7.561	2	6
61	5.971	41	7.233	21	7.573	1	6
60	6.053	40	7.248	20	7.584	0	5
59	6.127	39	7.260	19	7.593		
58	6.229	38	7.280	18	7.603		
57	6.334	37	7.302	17	7.613		
56	6.442	36	7.324	16	7.621		
55	6.554	35	7.347	15	7.630		
54	6.669	34	7.372	14	7.637		
53	6.756	33	7.388	13	7.648		
52	6.836	32	7.403	12	7.660		
51	6.909	31	7.415	11	7.673		
50	6.975	30	7.426	10	7.686		
49	7.034	29	7.434	9	7.700		
48	7.080	28	7.451	8	7.689		
47	7.117	27	7.469	7	7.671		
46	7.146	26	7.489	6	7.630		
45	7.165	25	7.510	5	7.547		

Older Age Sixty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
65	5.456	45	6.964	25	7.295	5	7.
64	5.566	44	6.986	24	7.310	4	7.
63	5.665	43	7.003	23	7.324	3	6.
62	5.753	42	7.017	22	7.337	2	6.
61	5.830	41	7.028	21	7.349	1	6.
60	5.895	40	7.034	20	7.361	0	5.
59	5.993	39	7.053	19	7.371		
58	6.094	38	7.073	18	7.379		
57	6.199	37	7.095	17	7.387		
56	6.307	36	7.118	16	7.393		
55	6.418	35	7.143	15	7.398		
54	6.506	34	7.160	14	7.409		
53	6.587	33	7.175	13	7.421		
52	6.664	32	7.198	12	7.434		
51	6.734	31	7.200	11	7.448		
50	6.799	30	7.210	10	7.463		
49	6.849	29	7.226	9	7.453		
48	6.891	28	7.242	8	7.454		
47	6.924	27	7.259	7	7.440		
46	6.948	26	7.277	6	7.399		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Sixty-Six Years.

lue.	Age.	Value.	Age.	Value.	Age.	Value.
230	46	6.740	26	7.047	6	7.156
345	45	6.763	25	7.061	5	7.050
147	44	6.781	24	7.076	4	6.909
536	43	6.794	23	7.090	3	6.734
313	42	6.802	22	7.104	2	6.400
578	41	6.804	21	7.118	1	6.018
71	40	6.821	20	7.128	0	5.235
366	39	6.839	19	7.136		
961	38	6.859	18	7.142		
958	37	6.880	17	7.147		
156	36	6.903	16	7.151		
241	35	6.920	15	7.161		
323	34	6.935	14	7.171		
101	33	6.949	13	7.182		
175	32	6.963	12	7.195		
546	31	6.975	11	7.208		
501	30	6.989	10	7.192		
547	29	7.004	9	7.202		
586	28	7.018	8	7.211		
17	27	7.033	7	7.198		

Older Age Sixty-Seven Years.

lue.	Age.	Value.	Age.	Value.	Age.	Value.
990	47	6.503	27	6.785	7	6.945
109	46	6.528	26	6.799	6	6.861
215	45	6.547	25	6.813	5	6.786
309	44	6.559	24	6.828	4	6.665
390	43	6.565	23	6.844	3	6.501
158	42	6.565	22	6.860	2	6.178
546	41	6.580	21	6.870	1	5.787
533	40	6.597	20	6.879	0	5.049
17	39	6.614	19	6.885		
300	38	6.632	18	6.891		
381	37	6.651	17	6.894		
963	36	6.667	16	6.903		
044	35	6.683	15	6.912		
124	34	6.698	14	6.922		
204	33	6.713	13	6.932		
282	32	6.728	12	6.943		
341	31	6.741	11	6.947		
392	30	6.753	10	6.949		
436	29	6.765	9	6.950		
473	28	6.775	8	6.948		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Sixty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
68	4.737	48	6.251	28	6.514	8	6.699
67	4.858	47	6.279	27	6.527	7	6.630
66	4.968	46	6.299	26	6.541	6	6.574
65	5.067	45	6.313	25	6.557	5	6.525
64	5.154	44	6.319	24	6.573	4	6.416
63	5.230	43	6.319	23	6.591	3	6.259
62	5.314	42	6.333	22	6.602	2	5.901
61	5.393	41	6.347	21	6.611	1	5.542
60	5.467	40	6.360	20	6.618	0	4.864
59	5.536	39	6.374	19	6.624		
58	5.600	38	6.388	18	6.628		
57	5.679	37	6.403	17	6.636		
56	5.759	36	6.419	16	6.643		
55	5.841	35	6.435	15	6.651		
54	5.924	34	6.451	14	6.659		
53	6.009	33	6.468	13	6.667		
52	6.071	32	6.480	12	6.674		
51	6.126	31	6.491	11	6.681		
50	6.174	30	6.500	10	6.687		
49	6.216	29	6.508	9	6.693		

Older Age Sixty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
69	4.471	49	5.980	29	6.236	9	6.425
68	4.592	48	6.010	28	6.248	8	6.377
67	4.705	47	6.033	27	6.262	7	6.329
66	4.808	46	6.050	26	6.276	6	6.298
65	4.902	45	6.059	25	6.292	5	6.265
64	4.988	44	6.061	24	6.309	4	6.164
63	5.069	43	6.074	23	6.320	3	5.960
62	5.143	42	6.085	22	6.329	2	5.637
61	5.209	41	6.096	21	6.337	1	5.316
60	5.268	40	6.105	20	6.344	0	4.679
59	5.319	39	6.113	19	6.350		
58	5.394	38	6.127	18	6.357		
57	5.472	37	6.142	17	6.363		
56	5.554	36	6.158	16	6.369		
55	5.638	35	6.176	15	6.375		
54	5.725	34	6.194	14	6.380		
53	5.788	33	6.206	13	6.388		
52	5.845	32	6.216	12	6.396		
51	5.896	31	6.224	11	6.405		
50	5.941	30	6.231	10	6.415		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
70	4.191	50	5.695	30	5.954	10	6.131
69	4.310	49	5.728	29	5.965	9	6.114
68	4.423	48	5.754	28	5.977	8	6.074
67	4.533	47	5.774	27	5.990	7	6.044
66	4.637	46	5.787	26	6.003	6	6.030
65	4.737	45	5.793	25	6.017	5	6.008
64	4.818	44	5.806	24	6.027	4	5.866
63	4.889	43	5.816	23	6.037	3	5.678
62	4.950	42	5.824	22	6.046	2	5.387
61	5.002	41	5.829	21	6.054	1	5.096
60	5.044	40	5.832	20	6.061	0	4.496
59	5.115	39	5.845	19	6.067		
58	5.189	38	5.859	18	6.073		
57	5.267	37	5.874	17	6.077		
56	5.347	36	5.891	16	6.081		
55	5.431	35	5.910	15	6.084		
54	5.494	34	5.922	14	6.092		
53	5.551	33	5.932	13	6.100		
52	5.604	32	5.941	12	6.109		
51	5.652	31	5.948	11	6.120		

Older Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
71	3.893	51	5.391	31	5.660	11	5.819
70	4.008	50	5.427	30	5.670	10	5.848
69	4.123	49	5.457	29	5.680	9	5.820
68	4.238	48	5.480	28	5.690	8	5.789
67	4.354	47	5.498	27	5.700	7	5.775
66	4.469	46	5.510	26	5.710	6	5.772
65	4.552	45	5.523	25	5.720	5	5.730
64	4.625	44	5.533	24	5.729	4	5.585
63	4.687	43	5.540	23	5.739	3	5.414
62	4.738	42	5.543	22	5.749	2	5.150
61	4.779	41	5.542	21	5.758	1	4.884
60	4.846	40	5.553	20	5.764	0	4.296
59	4.914	39	5.565	19	5.769		
58	4.982	38	5.579	18	5.773		
57	5.052	37	5.594	17	5.776		
56	5.123	36	5.611	16	5.778		
55	5.183	35	5.622	15	5.785		
54	5.239	34	5.633	14	5.792		
53	5.293	33	5.643	13	5.800		
52	5.344	32	5.652	12	5.809		

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 5 per Cent.)

Older Age Seventy-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
72	3.615	52	5.102	32	5.379	12	5
71	3.725	51	5.141	31	5.388	11	5
70	3.839	50	5.174	30	5.396	10	5
69	3.958	49	5.201	29	5.404	9	5
68	4.080	48	5.223	28	5.411	8	5
67	4.207	47	5.240	27	5.418	7	5
66	4.293	46	5.255	26	5.427	6	5
65	4.368	45	5.265	25	5.437	5	5
64	4.433	44	5.271	24	5.447	4	5
63	4.486	43	5.272	23	5.458	3	5
62	4.529	42	5.269	22	5.469	2	4
61	4.590	41	5.278	21	5.476	1	4
60	4.651	40	5.289	20	5.481	0	4
59	4.710	39	5.300	19	5.485		
58	4.769	38	5.313	18	5.488		
57	4.826	37	5.327	17	5.490		
56	4.883	36	5.338	16	5.496		
55	4.939	35	5.349	15	5.502		
54	4.994	34	5.359	14	5.508		
53	5.049	33	5.369	13	5.515		

Older Age Seventy-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
73	3.371	53	4.837	33	5.123	13	5.
72	3.476	52	4.878	32	5.131	12	5.
71	3.587	51	4.915	31	5.138	11	5.
70	3.705	50	4.946	30	5.144	10	5.
69	3.830	49	4.971	29	5.149	9	5.
68	3.961	48	4.992	28	5.153	8	5.
67	4.049	47	5.008	27	5.162	7	5.
66	4.127	46	5.019	26	5.171	6	5.
65	4.196	45	5.026	25	5.182	5	5.
64	4.254	44	5.027	24	5.194	4	5.
63	4.302	43	5.023	23	5.206	3	4.
62	4.359	42	5.031	22	5.213	2	4.
61	4.413	41	5.039	21	5.219	1	4.
60	4.463	40	5.048	20	5.223	0	3.
59	4.510	39	5.058	19	5.226		
58	4.553	38	5.068	18	5.228		
57	4.607	37	5.078	17	5.233		
56	4.663	36	5.089	16	5.238		
55	4.719	35	5.100	15	5.244		
54	4.778	34	5.111	14	5.249		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
74	3.165	54	4.600	34	4.894	14	5.016
73	3.265	53	4.643	33	4.902	13	5.021
72	3.371	52	4.681	32	4.908	12	5.027
71	3.484	51	4.714	31	4.913	11	5.033
70	3.604	50	4.742	30	4.917	10	5.040
69	3.731	49	4.766	29	4.920	9	5.047
68	3.820	48	4.784	28	4.928	8	5.084
67	3.901	47	4.797	27	4.937	7	5.092
66	3.973	46	4.805	26	4.948	6	5.056
65	4.038	45	4.808	25	4.959	5	4.979
64	4.094	44	4.806	24	4.971	4	4.844
63	4.150	43	4.813	23	4.978	3	4.759
62	4.199	42	4.820	22	4.984	2	4.550
61	4.244	41	4.826	21	4.990	1	4.293
60	4.282	40	4.832	20	4.994	0	3.756
59	4.315	39	4.838	19	4.997		
58	4.367	38	4.847	18	5.001		
57	4.421	37	4.858	17	5.005		
56	4.478	36	4.869	16	5.009		
55	4.538	35	4.881	15	5.013		

Older Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
75	3.015	55	4.400	35	4.706	15	4.821
74	3.108	54	4.443	34	4.714	14	4.826
73	3.206	53	4.483	33	4.721	13	4.832
72	3.308	52	4.518	32	4.727	12	4.839
71	3.416	51	4.549	31	4.731	11	4.847
70	3.528	50	4.577	30	4.735	10	4.855
69	3.616	49	4.598	29	4.743	9	4.853
68	3.700	48	4.613	28	4.751	8	4.892
67	3.778	47	4.624	27	4.759	7	4.884
66	3.852	46	4.629	26	4.768	6	4.834
65	3.921	45	4.630	25	4.778	5	4.756
64	3.977	44	4.637	24	4.785	4	4.668
63	4.025	43	4.642	23	4.791	3	4.581
62	4.066	42	4.646	22	4.797	2	4.366
61	4.099	41	4.649	21	4.802	1	4.110
60	4.125	40	4.650	20	4.807	0	3.596
59	4.174	39	4.658	19	4.811		
58	4.227	38	4.668	18	4.814		
57	4.282	37	4.679	17	4.817		
56	4.339	36	4.692	16	4.819		

Value of £1 per Annum during the joint Continuance of Two Li
(Carlisle 5 per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
76	2.870	56	4.201	36	4.520	16
75	2.956	55	4.243	35	4.528	15
74	3.044	54	4.282	34	4.535	14
73	3.134	53	4.319	33	4.542	13
72	3.226	52	4.353	32	4.548	12
71	3.319	51	4.385	31	4.553	11
70	3.406	50	4.408	30	4.560	10
69	3.492	49	4.427	29	4.567	9
68	3.578	48	4.441	28	4.574	8
67	3.661	47	4.451	27	4.581	7
66	3.746	46	4.456	26	4.588	6
65	3.805	45	4.463	25	4.595	5
64	3.856	44	4.468	24	4.601	4
63	3.897	43	4.471	23	4.608	3
62	3.930	42	4.472	22	4.614	2
61	3.954	41	4.470	21	4.620	1
60	4.000	40	4.477	20	4.624	0
59	4.048	39	4.486	19	4.627	
58	4.098	38	4.496	18	4.630	
57	4.149	37	4.507	17	4.631	

Older Age Seventy-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
77	2.744	57	4.013	37	4.348	17
76	2.823	56	4.053	36	4.356	16
75	2.901	55	4.093	35	4.363	15
74	2.977	54	4.132	34	4.370	14
73	3.053	53	4.170	33	4.377	13
72	3.127	52	4.208	32	4.384	12
71	3.212	51	4.234	31	4.390	11
70	3.300	50	4.256	30	4.396	10
69	3.390	49	4.273	29	4.401	9
68	3.484	48	4.286	28	4.406	8
67	3.580	47	4.294	27	4.410	7
66	3.643	46	4.302	26	4.416	6
65	3.696	45	4.307	25	4.423	5
64	3.740	44	4.310	24	4.430	4
63	3.775	43	4.309	23	4.438	3
62	3.800	42	4.305	22	4.446	2
61	3.843	41	4.311	21	4.450	1
60	3.886	40	4.318	20	4.454	0
59	3.929	39	4.327	19	4.456	
58	3.971	38	4.337	18	4.458	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Seventy-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
78	2.617	58	3.821	38	4.171	18	4.281
77	2.691	57	3.860	37	4.178	17	4.284
76	2.760	56	3.900	36	4.186	16	4.288
75	2.827	55	3.941	35	4.194	15	4.292
74	2.889	54	3.983	34	4.202	14	4.296
73	2.948	53	4.026	33	4.210	13	4.300
72	3.030	52	4.054	32	4.215	12	4.303
71	3.116	51	4.079	31	4.220	11	4.306
70	3.208	50	4.099	30	4.224	10	4.308
69	3.305	49	4.114	29	4.227	9	4.310
68	3.407	48	4.126	28	4.229	8	4.312
67	3.472	47	4.135	27	4.235	7	4.279
66	3.528	46	4.141	26	4.242	6	4.243
65	3.576	45	4.144	25	4.250	5	4.214
64	3.614	44	4.143	24	4.258	4	4.132
63	3.644	43	4.138	23	4.267	3	4.043
62	3.684	42	4.143	22	4.272	2	3.839
61	3.722	41	4.149	21	4.276	1	3.624
60	3.757	40	4.155	20	4.278	0	3.204
59	3.790	39	4.163	19	4.280		

Older Age Seventy-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
79	2.460	59	3.614	39	3.969	19	4.079
78	2.530	58	3.651	38	3.976	18	4.082
77	2.596	57	3.690	37	3.983	17	4.085
76	2.657	56	3.731	36	3.992	16	4.087
75	2.714	55	3.775	35	4.001	15	4.090
74	2.767	54	3.821	34	4.011	14	4.092
73	2.845	53	3.851	33	4.016	13	4.096
72	2.928	52	3.876	32	4.020	12	4.100
71	3.017	51	3.898	31	4.023	11	4.104
70	3.111	50	3.916	30	4.025	10	4.109
69	3.210	49	3.930	29	4.026	9	4.114
68	3.276	48	3.941	28	4.032	8	4.101
67	3.334	47	3.948	27	4.038	7	4.084
66	3.385	46	3.951	26	4.046	6	4.055
65	3.423	45	3.951	25	4.054	5	4.031
64	3.464	44	3.947	24	4.063	4	3.951
63	3.502	43	3.951	23	4.068	3	3.861
62	3.537	42	3.955	22	4.072	2	3.670
61	3.567	41	3.960	21	4.075	1	3.469
60	3.592	40	3.964	20	4.078	0	3.074

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age Eighty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
80	2.324	59	3.465	38	3.797	17	3.899
79	2.394	58	3.502	37	3·806	16	3.900
78	2.459	57	3.542	36	3.815	15	3.901
77	2.519	56	3.585	35	3.826	14	3.905
76	2.574	55	3.630	34	3.831	13	3.909
75	2.623	54	3.660	33	3.836	12	3.914
74	2.695	53	3.687	32	3.839	11	3.919
73	2.770	52	3.710	31	3.842	10	3.925
72	2.849	51	3.730	30	3.843	9	3.900
71	2.933	50	3.746	29	3.848	8	3.898
70	3.020	49	3.758	28	3.854	7	3.892
69	3.085	48	3.767	27	3.860	6	3.867
68	3.145	47	3.772	26	3.867	5	3.845
67	3.201	46	3.774	25	3.874	4	3.767
66	3.251	45	3.772	24	3.879	3	3.680
65	3.297	44	3.776	23	3.883	2	3.502
64	3.335	43	3.779	22	3.887	1	3.314
63	3.368	42	3.781	21	3.890	0	2.943
62	3.394	41	3.783	20	3.893		
61	3.415	40	3.784	19	3.896		
60	3.430	39	3.790	18	3.898		

Older Age Eighty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
81	2.163	60	3.274	39	3.595	18	3.692
80	2.232	59	3.307	38	3.603	17	3.693
79	2.298	58	3.342	37	3.611	16	3.693
78	2.359	57	3.379	36	3.621	15	3.696
77	2.414	56	3.418	35	3.626	14	3.700
76	2.467	55	3.447	34	3.631	13	3.704
75	2.532	54	3.473	33	3.635	12	3.709
74	2.599	53	3.497	32	3.638	11	3.714
73	2.667	52	3.519	31	3.641	10	3.705
72	2.736	51	3.539	30	3.646	9	3.697
71	2.807	50	3.553	29	3.650	8	3.703
70	2.871	49	3.564	28	3.655	7	3.708
69	2.933	48	3.572	27	3.661	6	3.680
68	2.994	47	3.576	26	3.666	5	3.655
67	3.053	46	3.577	25	3.671	4	3.583
66	3.111	45	3.581	24	3.675	3	3.498
65	3.151	44	3.584	23	3.679	2	3.333
64	3.184	43	3.585	22	3.683	1	3.159
63	3.210	42	3.585	21	3.687		
62	3.230	41	3.584	20	3.689		
61	3.242	40	3.589	19	3.691		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Eighty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
82	2.027	61	3.105	40	3.414	19	3.507
81	2.096	60	3.134	39	3.420	18	3.507
80	2.161	59	3.164	38	3.428	17	3.507
79	2.222	58	3.194	37	3.436	16	3.510
78	2.279	57	3.224	36	3.441	15	3.513
77	2.333	56	3.251	35	3.446	14	3.516
76	2.391	55	3.275	34	3.451	13	3.520
75	2.449	54	3.303	33	3.455	12	3.524
74	2.506	53	3.328	32	3.459	11	3.524
73	2.561	52	3.352	31	3.463	10	3.524
72	2.616	51	3.368	30	3.467	9	3.522
71	2.677	50	3.381	29	3.470	8	3.520
70	2.740	49	3.391	28	3.474	7	3.516
69	2.805	48	3.396	27	3.477	6	3.494
68	2.871	47	3.402	26	3.481	5	3.464
67	2.938	46	3.406	25	3.486	4	3.398
66	2.980	45	3.409	24	3.491	3	3.317
65	3.015	44	3.409	23	3.496	2	3.164
64	3.043	43	3.408	22	3.501		
63	3.063	42	3.405	21	3.504		
62	3.076	41	3.409	20	3.506		

Older Age Eighty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
83	1.882	62	2.931	41	3.228	20	3.315
82	1.947	61	2.956	40	3.233	19	3.315
81	2.011	60	2.980	39	3.239	18	3.315
80	2.073	59	3.003	38	3.245	17	3.317
79	2.134	58	3.024	37	3.250	16	3.320
78	2.194	57	3.050	36	3.255	15	3.322
77	2.247	56	3.076	35	3.260	14	3.325
76	2.298	55	3.103	34	3.265	13	3.328
75	2.345	54	3.131	33	3.270	12	3.330
74	2.389	53	3.159	32	3.273	11	3.332
73	2.430	52	3.177	31	3.276	10	3.333
72	2.488	51	3.192	30	3.279	9	3.334
71	2.550	50	3.204	29	3.281	8	3.335
70	2.615	49	3.212	28	3.282	7	3.338
69	2.684	48	3.218	27	3.286	6	3.308
68	2.757	47	3.223	26	3.291	5	3.274
67	2.801	46	3.226	25	3.296	4	3.214
66	2.838	45	3.227	24	3.302	3	3.135
65	2.867	44	3.225	23	3.308		
64	2.890	43	3.221	22	3.311		
63	2.905	42	3.224	21	3.313		

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 5 per Cent.)

Older Age Eighty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	'Age.	
84	1.741	62	2.781	40	3.054	18	3
83	1.802	61	2.801	39	3.058	17	3
82	1.863	60	2.818	38	3.063	16	3
81	1.924	59	2.832	37	3.068	15	3
80	1.985	58	2.856	36	3.073	14	3
79	2.045	57	2.883	35	3.079	13	3
78	2.095	56	2.910	34	3.085	12	3
77	2.142	55	2.940	33	3.088	11	3
76	2.185	54	2.971	32	3.091	10	3
75	2.224	53	2.990	31	3.093	9	3
74	2.260	52	3.006	30	3.094	8	3
73	2.315	51	3.019	29	3.094	7	3
72	2.374	50	3.029	28	3.098	6	3
71	2.437	49	3.036	27	3.102	5	3
70	2.504	48	3.042	26	3.107	4	3
69	2.575	47	3.046	25	3.113		
68	2.619	46	3.047	24	3.119		
67	2.658	45	3.046	23	3.122		
66	2.690	44	3.042	22	3.125		
65	2.715	43	3.044	21	3.126		
64	2.735	42	3.047	20	3.128		
63	2.759	41	3.050	19	3.128		

Older Age Eighty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
85	1.583	63	2.599	41	2.861	19	2
84	1.645	62	2.615	40	2.863	18	2
83	1.705	61	2.628	39	2.867	17	2
82	1.769	60	2.637	38	2.872	16	2
81	1.832	59	2.660	37	2.877	15	2
80	1.895	58	2.685	36	2.883	14	2
79	1.945	57	2.712	35	2.890	13	2
78	1.990	56	2.741	34	2.893	12	2
77	2.031	55	2.772	33	2.896	11	2
76	2.068	54	2.791	32	2.898	10	2
75	2.100	53	2.808	31	2.899	9	3
74	2.150	52	2.822	30	2.900	8	3
73	2.203	51	2.833	29	2.903	7	2
72	2.259	50	2.842	28	2.907	6	2
71	2.318	49	2.849	27	2.911	5	2
70	2.380	48	2.854	26	2.916		
69	2.423	47	2.856	25	2.921		
68	2.463	46	2.856	24	2.924		
67	2.498	45	2.854	23	2.927		
66	2.528	44	2.856	22	2.929		
65	2.555	43	2.858	21	2.931		
64	2.579	42	2.860	20	2.932		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Eighty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
86	1.444	64	2.439	42	2.694	20	2.760
85	1.500	63	2.456	41	2.693	19	2.761
84	1.558	62	2.467	40	2.696	18	2.762
83	1.618	61	2.474	39	2.701	17	2.762
82	1.681	60	2.495	38	2.706	16	2.762
81	1.747	59	2.517	37	2.711	15	2.764
80	1.796	58	2.541	36	2.718	14	2.767
79	1.842	57	2.567	35	2.721	13	2.770
78	1.884	56	2.594	34	2.724	12	2.773
77	1.922	55	2.613	33	2.726	11	2.777
76	1.956	54	2.629	32	2.728	10	2.822
75	2.001	53	2.644	31	2.729	9	2.871
74	2.048	52	2.657	30	2.732	8	2.863
73	2.096	51	2.668	29	2.735	7	2.803
72	2.145	50	2.676	28	2.739	6	2.751
71	2.195	49	2.683	27	2.742		
70	2.238	48	2.687	26	2.746		
69	2.279	47	2.689	25	2.749		
68	2.319	46	2.689	24	2.752		
67	2.357	45	2.691	23	2.754		
66	2.393	44	2.693	22	2.757		
65	2.419	43	2.693	21	2.759		

Older Age Eighty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
87	1.331	65	2.304	43	2.556	21	2.619
86	1.378	64	2.321	42	2.554	20	2.620
85	1.430	63	2.334	41	2.557	19	2.621
84	1.489	62	2.341	40	2.560	18	2.621
83	1.555	61	2.360	39	2.565	17	2.621
82	1.626	60	2.380	38	2.570	16	2.623
81	1.675	59	2.400	37	2.576	15	2.625
80	1.721	58	2.421	36	2.579	14	2.627
79	1.763	57	2.442	35	2.583	13	2.630
78	1.802	56	2.460	34	2.585	12	2.633
77	1.838	55	2.477	33	2.588	11	2.633
76	1.879	54	2.493	32	2.590	10	2.632
75	1.919	53	2.508	31	2.593	9	2.631
74	1.959	52	2.523	30	2.595	8	2.628
73	1.998	51	2.533	29	2.597	7	2.625
72	2.037	50	2.541	28	2.600		
71	2.079	49	2.547	27	2.602		
70	2.121	48	2.551	26	2.605		
69	2.165	47	2.553	25	2.608		
68	2.208	46	2.556	24	2.611		
67	2.253	45	2.557	23	2.614		
66	2.281	44	2.557	22	2.617		

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 5 per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.275	65	2.234	42	2.474	19	2.535
87	1.311	64	2.249	41	2.477	18	2.535
86	1.355	63	2.258	40	2.480	17	2.536
85	1.407	62	2.276	39	2.484	16	2.538
84	1.467	61	2.293	38	2.488	15	2.540
83	1.535	60	2.310	37	2.491	14	2.542
82	1.583	59	2.326	36	2.495	13	2.544
81	1.629	58	2.341	35	2.498	12	2.545
80	1.674	57	2.359	34	2.502	11	2.546
79	1.717	56	2.376	33	2.505	10	2.547
78	1.759	55	2.395	32	2.507	9	2.548
77	1.797	54	2.413	31	2.509	8	2.548
76	1.833	53	2.432	30	2.511		
75	1.867	52	2.444	29	2.512		
74	1.899	51	2.454	28	2.513		
73	1.928	50	2.462	27	2.516		
72	1.969	49	2.467	26	2.519		
71	2.013	48	2.471	25	2.523		
70	2.059	47	2.474	24	2.527		
69	2.108	46	2.476	23	2.531		
68	2.159	45	2.476	22	2.533		
67	2.189	44	2.475	21	2.534		
66	2.214	43	2.472	20	2.535		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.199	66	2.129	43	2.378	20	2.436
88	1.226	65	2.146	42	2.379	19	2.436
87	1.263	64	2.159	41	2.382	18	2.437
86	1.310	63	2.176	40	2.384	17	2.438
85	1.366	62	2.192	39	2.387	16	2.440
84	1.433	61	2.206	38	2.390	15	2.441
83	1.479	60	2.218	37	2.394	14	2.442
82	1.524	59	2.229	36	2.397	13	2.444
81	1.569	58	2.246	35	2.402	12	2.446
80	1.613	57	2.265	34	2.406	11	2.448
79	1.657	56	2.284	33	2.408	10	2.450
78	1.694	55	2.305	32	2.410	9	2.452
77	1.728	54	2.327	31	2.411		
76	1.760	53	2.340	30	2.412		
75	1.789	52	2.352	29	2.412		
74	1.815	51	2.361	28	2.415		
73	1.856	50	2.368	27	2.418		
72	1.899	49	2.373	26	2.421		
71	1.945	48	2.377	25	2.425		
70	1.995	47	2.379	24	2.430		
69	2.047	46	2.380	23	2.432		
68	2.079	45	2.379	22	2.434		
67	2.106	44	2.376	21	2.435		

Value [illegible] per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
90	1.045	67	1.967	44	2.228	21	2.282
89	1.063	66	1.990	43	2.230	20	2.283
88	1.096	65	2.009	42	2.231	19	2.284
87	1.143	64	2.027	41	2.232	18	2.285
86	1.204	63	2.042	40	2.233	17	2.286
85	1.279	62	2.054	39	2.236	16	2.286
84	1.326	61	2.063	38	2.239	15	2.287
83	1.373	60	2.070	37	2.243	14	2.289
82	1.420	59	2.087	36	2.248	13	2.291
81	1.468	58	2.105	35	2.253	12	2.293
80	1.515	57	2.124	34	2.255	11	2.296
79	1.552	56	2.145	33	2.257	10	2.299
78	1.586	55	2.168	32	2.259		
77	1.617	54	2.182	31	2.260		
76	1.645	53	2.194	30	2.260		
75	1.669	52	2.205	29	2.263		
74	1.707	51	2.213	28	2.265		
73	1.747	50	2.220	27	2.269		
72	1.789	49	2.225	26	2.272		
71	1.833	48	2.228	25	2.276		
70	1.880	47	2.230	24	2.278		
69	1.912	46	2.229	23	2.280		
68	1.941	45	2.227	22	2.281		

Older Age Ninety-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
91	1.007	68	1.916	45	2.211	22	2.263
90	1.018	67	1.947	44	2.212	21	2.265
89	1.043	66	1.976	43	2.213	20	2.266
88	1.083	65	1.997	42	2.213	19	2.267
87	1.136	64	2.013	41	2.212	18	2.268
86	1.203	63	2.026	40	2.215	17	2.268
85	1.248	62	2.036	39	2.218	16	2.268
84	1.296	61	2.041	38	2.222	15	2.270
83	1.345	60	2.058	37	2.227	14	2.271
82	1.397	59	2.075	36	2.232	13	2.274
81	1.450	58	2.091	35	2.235	12	2.276
80	1.490	57	2.114	34	2.237	11	2.279
79	1.528	56	2.135	33	2.239		
78	1.562	55	2.150	32	2.241		
77	1.593	54	2.163	31	2.242		
76	1.621	53	2.175	30	2.244		
75	1.658	52	2.186	29	2.247		
74	1.696	51	2.195	28	2.249		
73	1.735	50	2.202	27	2.252		
72	1.775	49	2.206	26	2.255		
71	1.816	48	2.209	25	2.257		
70	1.851	47	2.211	24	2.259		
69	1.884	46	2.210	23	2.261		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
92	1.073	72	1.836	52	2.273	32	2.329
91	1.079	71	1.874	51	3.282	31	2.331
90	1.093	70	1.913	50	2.289	30	2.333
89	1.117	69	1.952	49	2.294	29	2.335
88	1.150	68	1.992	48	2.297	28	2.337
87	1.192	67	2.033	47	2.298	27	2.339
86	1.234	66	2.058	46	2.300	26	2.342
85	1.281	65	2.079	45	2.301	25	2.344
84	1.335	64	2.094	44	2.301	24	2.347
83	1 395	63	2.105	43	2.299	23	2.350
82	1.460	62	2.111	42	2.297	22	2.353
81	1.505	61	2.128	41	2.299	21	2.355
80	1.547	60	2.145	40	2.302	20	2.356
79	1.586	59	2.163	39	2.306	19	2.356
78	1.623	58	2.181	38	2.311	18	2.356
77	1.656	57	2.199	37	2.316	17	2.356
76	1.693	56	2.215	36	2.319	16	2.357
75	1.730	55	2.230	35	2.322	15	2.359
74	1.766	54	2.245	34	2.325	14	2.361
73	1.801	53	2.259	33	2.327	13	2.363
						12	2.366

Older Age Ninety-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
93	1.173	73	1.873	53	2.366	33	2.432
92	1.175	72	1.914	52	2.377	32	2.434
91	1.181	71	1.957	51	2.387	31	2.436
90	1.190	70	2.003	50	2.394	30	2.437
89	1.203	69	2.052	49	2.398	29	2.438
88	1.219	68	2.103	48	2.401	28	2.438
87	1.254	67	2.133	47	2.404	27	2.441
86	1.297	66	2.158	46	2.405	26	2.444
85	1.349	65	2.177	45	2.404	25	2.447
84	1.410	64	2.191	44	2.402	24	2.451
83	1.479	63	2.199	43	2.399	23	2.456
82	1.527	62	2.216	42	2.401	22	2.458
81	1.574	61	2.232	41	2.403	21	2.459
80	1.619	60	2.248	40	2.406	20	2.460
79	1.663	59	2.262	39	2 410	19	2.460
78	1.706	58	2.276	38	2.415	18	2.460
77	1.744	57	2.293	37	2.418	17	2.461
76	1.780	56	2.310	36	2.422	16	2.463
75	1.813	55	2.328	35	2.425	15	2.464
74	1.844	54	2.347	34	2.429	14	2.466
						13	2.468

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.245	74	1.880	54	2.408	34	2.482
93	1.246	73	1.923	53	2.421	33	2.484
92	1.243	72	1.969	52	2.432	32	2.486
91	1.237	71	2.018	51	2.441	31	2.487
90	1.227	70	2.071	50	2.447	30	2.487
89	1.214	69	2.126	49	2.451	29	2.487
88	1.242	68	2.161	48	2.454	28	2.490
87	1.281	67	2.187	47	2.456	27	2.493
86	1.332	66	2.210	46	2.456	26	2.497
85	1.394	65	2.229	45	2.454	25	2.501
84	1.468	64	2.240	44	2.451	24	2.506
83	1.518	63	2.257	43	2.452	23	2.508
82	1.567	62	2.272	42	2.454	22	2.510
81	1.616	61	2.285	41	2.456	21	2.511
80	1.665	60	2.297	40	2.458	20	2.511
79	1.713	59	2.306	39	2.461	19	2.511
78	1.753	58	2.324	38	2.464	18	2.512
77	1.789	57	2.343	37	2.468	17	2.513
76	1.823	56	2.363	36	2.472	16	2.515
75	1.853	55	2.385	35	2.477	15	2.516
						14	2.517

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.323	75	1.893	55	2.430	35	2.510
94	1.327	74	1.935	54	2.445	34	2.513
93	1.314	73	1.980	53	2.457	33	2.514
92	1.282	72	2.028	52	2.467	32	2.516
91	1.234	71	2.078	51	2.474	31	2.516
90	1.167	70	2.130	50	2.479	30	2.516
89	1.188	69	2.165	49	2.483	29	2.519
88	1.226	68	2.197	48	2.486	28	2.522
87	1.281	67	2.224	47	2.486	27	2.525
86	1.353	66	2.247	46	2.485	26	2.529
85	1.443	65	2.266	45	2.482	25	2.533
84	1.498	64	2.284	44	2.483	24	2.535
83	1.554	63	2.298	43	2.484	23	2.537
82	1.609	62	2.309	42	2.485	22	2.538
81	1.665	61	2.317	41	2.486	21	2.539
80	1.720	60	2.322	40	2.487	20	2.540
79	1.763	59	2.339	39	2.490	19	2.541
78	1.802	58	2.359	38	2.494	18	2.542
77	1.836	57	2.381	37	2.499	17	2.542
76	1.867	56	2.404	36	2.504	16	2.543
						15	2.543

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.364	76	1.866	56	2.388	36	2.473
95	1.383	75	1 906	55	2.402	35	2.476
94	1.372	74	1.947	54	2.415	34	2.478
93	1.331	73	1.988	53	2.426	33	2.479
92	1.261	72	2.031	52	2.435	32	2.480
91	1.161	71	2.075	51	2.442	31	2.481
90	1.173	70	2.111	50	2.447	30	2.483
89	1.203	69	2.145	49	2.451	29	2.486
88	1.250	68	2.178	48	2.453	28	2.488
87	1.315	67	2.208	47	2.453	27	2.491
86	1.397	66	2.237	46	2.451	26	2.494
85	1.450	65	2.256	45	2.452	25	2.500
84	1.505	64	2.271	44	2.452	24	2.500
83	1.563	63	2.282	43	2.453	23	2.500
82	1.622	62	2.288	42	2.452	22	2.502
81	1.683	61	2.290	41	2.452	21	2.504
80	1.728	60	2.306	40	2.455	20	2.505
79	1.769	59	2.324	39	2.458	19	2.506
78	1.805	58	2.343	38	2.462	18	2.506
77	1.838	57	2.365	37	2.467	17	2.506
						16	2.505

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.339	77	1.791	57	2.266	37	2.354
96	1.383	76	1.826	56	2.279	36	2.357
95	1.389	75	1.860	55	2.291	35	2.359
94	1.357	74	1.894	54	2.303	34	2.361
93	1.288	73	1.927	53	2.313	33	2.362
92	1.181	72	1.959	52	2.323	32	2.363
91	1.186	71	1.993	51	2.329	31	2.365
90	1.202	70	2.028	50	2.334	30	2.366
89	1.231	69	2.063	49	2.337	29	2.368
88	1.271	68	2.098	48	2.338	28	2.370
87	1.324	67	2.134	47	2.338	27	2.371
86	1.369	66	2.154	46	2.339	26	2.373
85	1.420	65	2.170	45	2.339	25	2.375
84	1.477	64	2.180	44	2.338	24	2.377
83	1.539	63	2.186	43	2.337	23	2.380
82	1.607	62	2.187	42	2.335	22	2.382
81	1.652	61	2.201	41	2.337	21	2.383
80	1.693	60	2·216	40	2.340	20	2.384
79	1.729	59	2.231	39	2.344	19	2.384
78	1.762	58	2.248	38	2.348	18	2.384
						17	2.333

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.323	78	1.708	58	2.125	38	2.212
97	1.396	77	1.738	57	2.137	37	2.214
96	1.422	76	1.766	56	2.149	36	2.217
95	1.400	75	1.792	55	2.161	35	2.219
94	1.331	74	1.816	54	2.173	34	2.220
93	1.215	73	1.837	53	2.185	33	2.222
92	1.214	72	1.869	52	2.192	32	2.223
91	1.220	71	1.902	51	2.197	31	2.224
90	1.233	70	1.938	50	2.201	30	2.225
89	1.253	69	1.976	49	2.203	29	2.226
88	1.280	68	2.015	48	2.203	28	2.226
87	1.315	67	2.036	47	2.204	27	2.228
86	1.356	66	2.051	46	2.204	26	2.230
85	1.405	65	2.061	45	2.203	25	2.233
84	1.461	64	2.067	44	2.201	24	2.236
83	1.524	63	2.067	43	2.198	23	2.239
82	1.566	62	2.078	42	2.199	22	2.240
81	1.605	61	2.090	41	2.201	21	2.241
80	1.642	60	2.101	40	2.204	20	2.241
79	1.676	59	2.113	39	2.208	19	2.241
						18	2.240

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.251	79	1.561	59	1.910	39	1.990
98	1.239	78	1.586	58	1.920	38	1.992
97	1.227	77	1.609	57	1.931	37	1.994
96	1.215	76	1.630	56	1.942	36	1.996
95	1.203	75	1.648	55	1.955	35	1.998
94	1.191	74	1.663	54	1.968	34	2.000
93	1.186	73	1.691	53	1.975	33	2.001
92	1.184	72	1.720	52	1.980	32	2.002
91	1.184	71	1.753	51	1.983	31	2.002
90	1.187	70	1.787	50	1.985	30	2.002
89	1.192	69	1.824	49	1.985	29	2.001
88	1.217	68	1.843	48	1.986	28	2.003
87	1.250	67	1.857	47	1.986	27	2.005
86	1.291	66	1.866	46	1.985	26	2.007
85	1.340	65	1.871	45	1.984	25	2.010
84	1.398	64	1.872	44	1.981	24	2.013
83	1.434	63	1.880	43	1.982	23	2.014
82	1.468	62	1.888	42	1.983	22	2.015
81	1.501	61	1.896	41	1.985	21	2.015
80	1.532	60	1.903	40	1.987	20	2.015
						19	2.014

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.364	76	1.866	56	2.388	36	2.473
95	1.383	75	1 906	55	2.402	35	2.476
94	1.372	74	1.947	54	2.415	34	2.478
93	1.331	73	1.988	53	2.426	33	2.479
92	1.261	72	2.031	52	2.435	32	2.480
91	1.161	71	2.075	51	2.442	31	2.481
90	1.173	70	2.111	50	2.447	30	2.483
89	1.203	69	2.145	49	2.451	29	2.486
88	1.250	68	2.178	48	2.453	28	2.488
87	1.315	67	2.208	47	2.453	27	2.491
86	1.397	66	2.237	46	2.451	26	2.494
85	1.450	65	2.256	45	2.452	25	2.500
84	1.505	64	2.271	44	2.452	24	2.500
83	1.563	63	2.282	43	2.453	23	2.500
82	1.622	62	2.288	42	2.452	22	2.502
81	1.683	61	2.290	41	2.452	21	2.504
80	1.728	60	2.306	40	2.455	20	2.505
79	1.769	59	2.324	39	2.458	19	2.506
78	1.805	58	2.343	38	2.462	18	2.506
77	1.838	57	2.365	37	2.467	17	2.506
						16	2.505

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.339	77	1.791	57	2.266	37	2.354
96	1.383	76	1.826	56	2.279	36	2.357
95	1.389	75	1.860	55	2.291	35	2.359
94	1.357	74	1.894	54	2.303	34	2.361
93	1.288	73	1.927	53	2.313	33	2.362
92	1.181	72	1.959	52	2.323	32	2.363
91	1.186	71	1.993	51	2.329	31	2.365
90	1.202	70	2.028	50	2.334	30	2.366
89	1.231	69	2.063	49	2.337	29	2.368
88	1.271	68	2.098	48	2.338	28	2.370
87	1.324	67	2.134	47	2.338	27	2.371
86	1.369	66	2.154	46	2.339	26	2.373
85	1.420	65	2.170	45	2.339	25	2.375
84	1.477	64	2.180	44	2.338	24	2.377
83	1.539	63	2.186	43	2.337	23	2.380
82	1.607	62	2.187	42	2.335	22	2.382
81	1.652	61	2.201	41	2.337	21	2.383
80	1.693	60	2·216	40	2.340	20	2.384
79	1.729	59	2.231	39	2.344	19	2.384
78	1.762	58	2.248	38	2.348	18	2.384
						17	2.383

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.323	78	1.708	58	2.125	38	2.212
97	1.396	77	1.738	57	2.137	37	2.214
96	1.422	76	1.766	56	2.149	36	2.217
95	1.400	75	1.792	55	2.161	35	2.219
94	1.331	74	1.816	54	2.173	34	2.220
93	1.215	73	1.837	53	2.185	33	2.222
92	1.214	72	1.869	52	2.192	32	2.223
91	1.220	71	1.902	51	2.197	31	2.224
90	1.233	70	1.938	50	2.201	30	2.225
89	1.253	69	1.976	49	2.203	29	2.226
88	1.280	68	2.015	48	2.203	28	2.226
87	1.315	67	2.036	47	2.204	27	2.228
86	1.356	66	2.051	46	2.204	26	2.230
85	1.405	65	2.061	45	2.203	25	2.233
84	1.461	64	2.067	44	2.201	24	2.236
83	1.524	63	2.067	43	2.198	23	2.239
82	1.566	62	2.078	42	2.199	22	2.240
81	1.605	61	2.090	41	2.201	21	2.241
80	1.642	60	2.101	40	2.204	20	2.241
79	1.676	59	2.113	39	2.208	19	2.241
						18	2.240

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.251	79	1.561	59	1.910	39	1.990
98	1.239	78	1.586	58	1.920	38	1.992
97	1.227	77	1.609	57	1.931	37	1.994
96	1.215	76	1.630	56	1.942	36	1.996
95	1.203	75	1.648	55	1.955	35	1.998
94	1.191	74	1.663	54	1.968	34	2.000
93	1.186	73	1.691	53	1.975	33	2.001
92	1.184	72	1.720	52	1.980	32	2.002
91	1.184	71	1.753	51	1.983	31	2.002
90	1.187	70	1.787	50	1.985	30	2.002
89	1.192	69	1.824	49	1.985	29	2.001
88	1.217	68	1.843	48	1.986	28	2.003
87	1.250	67	1.857	47	1.986	27	2.005
86	1.291	66	1.866	46	1.985	26	2.007
85	1.340	65	1.871	45	1.984	25	2.010
84	1.398	64	1.872	44	1.981	24	2.013
83	1.434	63	1.880	43	1.982	23	2.014
82	1.468	62	1.888	42	1.983	22	2.015
81	1.501	61	1.896	41	1.985	21	2.015
80	1.532	60	1.903	40	1.987	20	2.015
						19	2.014

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 5 per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
100	0.962	79	1.293	58	1.538	37	1.589
99	0.977	78	1.310	57	1.548	36	1.591
98	0.992	77	1.325	56	1.558	35	1.593
97	1.008	76	1.337	55	1.569	34	1.594
96	1.023	75	1.346	54	1.574	33	1.594
95	1.038	74	1.366	53	1.578	32	1.595
94	1.034	73	1.387	52	1.581	31	1.594
93	1.023	72	1.410	51	1.583	30	1.594
92	1.005	71	1.435	50	1.583	29	1.595
91	0.981	70	1.462	49	1.584	28	1.596
90	0.950	69	1.476	48	1.584	27	1.598
89	0.965	68	1.487	47	1.584	26	1.600
88	0.991	67	1.495	46	1.583	25	1.602
87	1.027	66	1.500	45	1.581	24	1.603
86	1.075	65	1.502	44	1.581	23	1.603
85	1.133	64	1.508	43	1.582	22	1.603
84	1.164	63	1.513	42	1.582	21	1.603
83	1.194	62	1.517	41	1.583	20	1.603
82	1.222	61	1.520	40	1.584		
81	1.248	60	1.523	39	1.585		
80	1.273	59	1.530	38	1.587		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
101	0.670	80	0.972	59	1.137	38	1.170
100	0.702	79	0.984	58	1.142	37	1.171
99	0.733	78	0.995	57	1.149	36	1.173
98	0.765	77	1.003	56	1.156	35	1.174
97	0.796	76	1.010	55	1.160	34	1.174
96	0.828	75	1.023	54	1.162	33	1.174
95	0.829	74	1.036	53	1.164	32	1.174
94	0.820	73	1.050	52	1.166	31	1.174
93	0.801	72	1.065	51	1.166	30	1.175
92	0.772	71	1.081	50	1.167	29	1.176
91	0.733	70	1.091	49	1.167	28	1.177
90	0.740	69	1.099	48	1.167	27	1.178
89	0.756	68	1.106	47	1.167	26	1.179
88	0.780	67	1.111	46	1.166	25	1.180
87	0.813	66	1.115	45	1.166	24	1.180
86	0.855	65	1.119	44	1.166	23	1.180
85	0.877	64	1.122	43	1.167	22	1.180
84	0.898	63	1.125	42	1.167	21	1.180
83	0.919	62	1.126	41	1.167		
82	0.938	61	1.127	40	1.168		
81	0.957	60	1.131	39	1.169		

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 5 per Cent.)

Older Age One Hundred and Two Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
.379	81	.632	60	.723	39	.741
.414	80	.639	59	.726	38	.742
.449	79	.646	58	.729	37	.743
.485	78	.650	57	.733	36	.743
.520	77	.654	56	.735	35	.744
.555	76	.661	55	.736	34	.744
.563	75	.667	54	.737	33	.743
.563	74	.674	53	.738	32	.743
.554	73	.681	52	.738	31	.743
.535	72	.688	51	.739	30	.744
.508	71	.694	50	.739	29	.744
.510	70	.699	49	.739	28	.744
.517	69	.703	48	.739	27	.745
.527	68	.707	47	.739	26	.745
.541	67	.711	46	.739	25	.746
.559	66	.714	45	.739	24	.746
.571	65	.716	44	.739	23	.746
.583	64	.717	43	.739	22	.746
.596	63	.718	42	.739		
.609	62	.718	41	.740		
.623	61	.720	40	.740		

Older Age One Hundred and Three Years.

Value.	Age	Value.	Age.	Value.	Age.	Value.
.106	82	.273	61	.307	40	.314
.135	81	.276	60	.308	39	.314
.163	80	.279	59	.309	38	.314
.192	79	.281	58	.310	37	.314
.220	78	.283	57	.311	36	.314
.249	77	.285	56	.311	35	.314
.259	76	.287	55	.312	34	.314
.262	75	.289	54	.312	33	.314
.259	74	.291	53	.312	32	.314
.250	73	.293	52	.312	31	.314
.235	72	.295	51	.313	30	.315
.235	71	.297	50	.313	29	.315
.237	70	.299	49	.313	28	.315
.240	69	.301	48	.313	27	.315
.243	68	.303	47	.313	26	.315
.248	67	.304	46	.313	25	.315
.252	66	.305	45	.313	24	.315
.256	65	.305	44	.313	23	.315
.260	64	.305	43	.313		
.265	63	.305	42	.313		
.270	62	.306	41	.313		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Live
(Carlisle 6 per Cent.)

Older Age 0 Years.

Age.	Value.
0	6.783

Older Age One Year

Age.	Value.
1	9.043
0	7.471

Older Age Two Years.

Age.	Value.
2	10.340
1	9.543
0	8.063

Older Age Three Yea

Age.	Value.
3	11.535
2	10.712
1	9.972
0	8.561

Older Age Four Years.

Age.	Value.
4	12.211
3	11.766
2	11.028
1	10.328
0	8.963

Older Age Five Year

Age.	Value.
5	12.721
4	12.352
3	11.958
2	11.287
1	10.612
0	9.270

Older Age Six Years.

Age.	Value.	Age.	Value.
6	12.977	2	11.489
5	12.783	1	10.824
4	12.466	0	9.314
3	12.112		

Older Age Seven Year

Age.	Value.	Age.	
7	13.100	3	1
6	12.990	2	1
5	12.830	1	1
4	12.553	0	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Eight Years.				Older Age Nine Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	13.134	3	12.306	9	13.107	4	12.649
7	13.083	2	11.618	8	13.098	3	12.271
6	12.995	1	10.837	7	13.062	2	11.598
5	12.861	0	9.369	6	12.991	1	10.833
4	12.614			5	12.876	0	9.380

Older Age Ten Years.				Older Age Eleven Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
10	13.036	4	12.603	11	12.943	5	12.824
9	13.061	3	12.235	10	12.987	4	12.557
8	13.061	2	11.574	9	13.015	3	12.197
7	13.036	1	10.821	8	13.023	2	11.547
6	12.978	0	9.379	7	13.006	1	10.803
5	12.875			6	12.957	0	9.343

Older Age Twelve Years.				Older Age Thirteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
12	12.853	5	12.775	13	12.761	6	12.860
11	12.885	4	12.512	12	12.799	5	12.727
10	12.913	3	12.159	11	12.837	4	12.468
9	12.937	2	11.516	10	12.873	3	12.120
8	12.957	1	10.763	9	12.909	2	11.475
7	12.973	0	9.308	8	12.943	1	10.723
6	12.908			7	12.927	0	9.274

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fourteen Years.				Older Age Fifteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
14	12.668	6	12.812	15	12.578	7	12.835
13	12.710	5	12.680	14	12.620	6	12.766
12	12.752	4	12.424	13	12.664	5	12.634
11	12.795	3	12.080	12	12.708	4	12.386
10	12.838	2	11.434	11	12.754	3	12.040
9	12.882	1	10.683	10	12.801	2	11.393
8	12.901	0	9.240	9	12.844	1	10.644
7	12.881			8	12.858	0	9.217

Older Age Sixteen Years.				Older Age Seventeen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
16	12.499	7	12.789	17	12.428	8	12.729
15	12.541	6	12.720	16	12.469	7	12.743
14	12.583	5	12.598	15	12.511	6	12.681
13	12.626	4	12.347	14	12.552	5	12.56[illegible]
12	12.670	3	11.998	13	12.594	4	12.30[illegible]
11	12.715	2	11.352	12	12.635	3	11.95[illegible]
10	12.766	1	10.606	11	12.665	2	11.31[illegible]
9	12.804	0	9.180	10	12.690	1	10.57[illegible]
8	12.814			9	12.712	0	9.15[illegible]

Older Age Eighteen Years.				Older Age Nineteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
18	12.358	8	12.722	19	12.284	9	12.670
17	12.399	7	12.705	18	12.325	8	12.680
16	12.439	6	12.644	17	12.365	7	12.663
15	12.479	5	12.518	16	12.402	6	12.601
14	12.517	4	12.260	15	12.437	5	12.472
13	12.554	3	11.910	14	12.470	4	12.214
12	12.590	2	11.275	13	12.509	3	11.869
11	12.625	1	10.541	12	12.548	2	11.236
10	12.658	0	9.121	11	12.588	1	10.504
9	12.691			10	12.629	0	9.088

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
20	12.206	14	12.424	8	12.635	2	11.194
19	12.248	13	12.465	7	12.616	1	10.465
18	12.287	12	12.507	6	12.554	0	9.053
17	12.322	11	12.550	5	12.424		
16	12.355	10	12.594	4	12.167		
15	12.385	9	12.624	3	11.825		

Older Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
21	12.123	15	12.343	9	12.574	3	11.777
20	12.166	14	12.382	8	12.586	2	11.149
19	12.206	13	12.422	7	12.566	1	10.422
18	12.242	12	12.463	6	12.503	0	9.015
17	12.275	11	12.505	5	12.370		
16	12.304	10	12.542	4	12.117		

Older Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
22	12.031	16	12.260	10	12.464	4	12.065
21	12.077	15	12.298	9	12.483	3	11.726
20	12.119	14	12.337	8	12.500	2	11.100
19	12.157	13	12.375	7	12.512	1	10.372
18	12.191	12	12.413	6	12.443	0	8.975
17	12.222	11	12.440	5	12.314		

Older Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
23	11.933	16	12.212	9	12.445	2	11.041
22	11.981	15	12.248	8	12.475	1	10.322
21	12.026	14	12.283	7	12.445	0	8.934
20	12.066	13	12.317	6	12.382		
19	12.104	12	12.350	5	12.257		
18	12.137	11	12.383	4	12.009		
17	12.175	10	12.414	3	11.671		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	11.829	17	12.121	10	12.366	3	11.604
23	11.879	16	12.155	9	12.405	2	10.982
22	11.926	15	12.187	8	12.404	1	10.270
21	11.969	14	12.217	7	12.379	0	8.891
20	12.010	13	12.253	6	12.320		
19	12.047	12	12.290	5	12.197		
18	12.085	11	12.328	4	11.950		

Older Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	11.718	18	12.026	11	12.269	4	11.881
24	11.769	17	12.058	10	12.311	3	11.539
23	11.818	16	12.088	9	12.334	2	10.923
22	11.865	15	12.115	8	12.334	1	10.218
21	11.909	14	12.152	7	12.313	0	8.847
20	11.952	13	12.189	6	12.257		
19	11.990	12	12.229	5	12.135		

Older Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	11.605	19	11.929	12	12.166	5	12.068
25	11.657	18	11.962	11	12.205	4	11.812
24	11.707	17	11.991	10	12.244	3	11.474
23	11.757	16	12.017	9	12.263	2	10.865
22	11.805	15	12.053	8	12.265	1	10.165
21	11.853	14	12.089	7	12.247	0	8.798
20	11.893	13	12.127	6	12.193		

Older Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	11.485	20	11.826	13	12.060	6	12.130
26	11.537	19	11.860	12	12.096	5	12.001
25	11.589	18	11.891	11	12.121	4	11.744
24	11.641	17	11.919	10	12.141	3	11.409
23	11.694	16	11.954	9	12.159	2	10.806
22	11.746	15	11.989	8	12.172	1	10.112
21	11.788	14	12.025	7	12.182	0	8.750

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 6 per Cent.)

Older Age Twenty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
28	11.365	20	11.758	12	12.017	4	11.677
27	11.418	19	11.792	11	12.047	3	11.346
26	11.471	18	11.822	10	12.075	2	10.754
25	11.525	17	11.857	9	12.103	1	10.058
24	11.581	16	11.890	8	12.130	0	8.701
23	11.637	15	11.923	7	12.124		
22	11.681	14	11.956	6	12.066		
21	11.721	13	11.987	5	11.934		

Older Age Twenty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
29	11.259	21	11.660	13	11.917	5	11.866
28	11.312	20	11.696	12	11.951	4	11.611
27	11.366	19	11.730	11	11.986	3	11.293
26	11.420	18	11.764	10	12.021	2	10.698
25	11.476	17	11.797	9	12.057	1	10.002
24	11.532	16	11.828	8	12.076	0	8.651
23	11.578	15	11.857	7	12.063		
22	11.620	14	11.884	6	11.999		

Older Age Thirty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
30	11.173	22	11.566	14	11.826	6	11.931
29	11.226	21	11.607	13	11.861	5	11.797
28	11.278	20	11.646	12	11.897	4	11.556
27	11.330	19	11.681	11	11.934	3	11.237
26	11.382	18	11.713	10	11.973	2	10.640
25	11.433	17	11.742	9	12.002	1	9.945
24	11.479	16	11.769	8	12.017	0	8.602
23	11.524	15	11.793	7	11.999		

Older Age Thirty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
31	11.086	23	11.471	15	11.740	7	11.931
30	11.139	22	11.516	14	11.773	6	11.861
29	11.190	21	11.559	13	11.807	5	11.736
28	11.239	20	11.595	12	11.843	4	11.497
27	11.287	19	11.628	11	11.879	3	11.176
26	11.333	18	11.657	10	11.914	2	10.579
25	11.380	17	11.684	9	11.942	1	9.886
24	11.426	16	11.707	8	11.953	0	8.558

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Thirty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Va
32	10.995	23	11.418	14	11.718	5	11.
31	11.048	22	11.466	13	11.750	4	11.
30	11.097	21	11.504	12	11.783	3	11.
29	11.143	20	11.538	11	11.805	2	10.
28	11.187	19	11.570	10	11.824	1	9.
27	11.227	18	11.597	9	11.839	0	8.
26	11.274	17	11.622	8	11.851		
25	11.322	16	11.654	7	11.860		
24	11.370	15	11.686	6	11.793		

Older Age Thirty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
33	10.894	24	11.313	15	11.624	6	1
32	10.947	23	11.365	14	11.653	5	1
31	10.995	22	11.405	13	11.681	4	1
30	11.040	21	11.442	12	11.709	3	1
29	11.080	20	11.475	11	11.736	2	
28	11.116	19	11.505	10	11.762	1	
27	11.164	18	11.532	9	11.788	0	
26	11.212	17	11.563	8	11.813		
25	11.262	16	11.594	7	11.784		

Older Age Thirty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
34	10.783	25	11.204	16	11.523	7
33	10.837	24	11.255	15	11.549	6
32	10.886	23	11.296	14	11.573	5
31	10.931	22	11.335	13	11.603	4
30	10.971	21	11.371	12	11.634	3
29	11.007	20	11.404	11	11.664	
28	11.055	19	11.435	10	11.699	
27	11.103	18	11.466	9	11.733	
26	11.153	17	11.495	8	11.730	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
35	10.666	26	11.092	17	11.418	8	11.646
34	10.722	25	11.139	16	11.441	7	11.625
33	10.774	24	11.181	15	11.462	6	11.566
32	10.822	23	11.221	14	11.492	5	11.448
31	10.865	22	11.260	13	11.524	4	11.203
30	10.904	21	11.297	12	11.558	3	10.883
29	10.951	20	11.332	11	11.593	2	10.304
28	10.998	19	11.363	10	11.629	1	9.641
27	11.045	18	11.392	9	11.644	0	8.352

Older Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
36	10.541	26	11.018	16	11.352	6	11.483
35	10.599	25	11.060	15	11.381	5	11.355
34	10.654	24	11.102	14	11.412	4	11.116
33	10.705	23	11.143	13	11.444	3	10.802
32	10.753	22	11.183	12	11.477	2	10.230
31	10.797	21	11.223	11	11.511	1	9.572
30	10.844	20	11.255	10	11.537	0	8.286
29	10.890	19	11.284	9	11.555		
28	10.934	18	11.310	8	11.560		
27	10.977	17	11.332	7	11.541		

Older Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
37	10.413	27	10.891	17	11.244	7	11.455
36	10.473	26	10.933	16	11.273	6	11.390
35	10.530	25	10.976	15	11.302	5	11.263
34	10.584	24	11.019	14	11.331	4	11.028
33	10.636	23	11.063	13	11.361	3	10.720
32	10.686	22	11.107	12	11.391	2	10.153
31	10.732	21	11.141	11	11.410	1	9.496
30	10.776	20	11.171	10	11.427	0	8.220
29	10.817	19	11.199	9	11.439		
28	10.855	18	11.223	8	11.449		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	9.563	32	10.168	20	10.565	8	10.831
43	9 627	31	10.200	19	10.589	7	10.813
42	9.686	30	10.229	18	10.613	6	10.753
41	9.740	29	10.254	17	10.635	5	10.632
40	9.788	28	10.290	16	10.656	4	10.402
39	9.831	27	10.328	15	10.676	3	10.117
38	9.884	26	10.367	14	10.694	2	9.584
37	9.936	25	10.407	13	10.718	1	8.968
36	9.988	24	10.449	12	10.742	0	7.776
35	10.040	23	10.481	11	10.767		
34	10.091	22	10.512	10	10.793		
33	10.131	21	10.540	9	10.820		

Older Age Forty-Five Years.

Age.	Value.	Age	Value.	Age.	Value.	Age.	Value.
45	9.444	33	10.048	21	10.446	9	10.724
44	9.511	32	10.083	20	10.473	8	10.733
43	9.571	31	10.114	19	10.497	7	10.710
42	9.623	30	10.142	18	10.518	6	10.645
41	9.668	29	10.178	17	10.538	5	10.523
40	9.705	28	10.214	16	10.555	4	10.308
39	9.757	27	10.250	15	10.570	3	10.024
38	9.810	26	10.286	14	10.594	2	9.492
37	9.863	25	10.323	13	10.618	1	8.879
36	9.915	24	10.356	12	10.645	0	7.698
35	9.968	23	10.387	11	10.672		
34	10.010	22	10.417	10	10.701		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	9.314	34	9.920	22	10.317	10	10.591
45	9.386	33	9.957	21	10.348	9	10.615
44	9.449	32	9.992	20	10.372	8	10.622
43	9.502	31	10.024	19	10.394	7	10.595
42	9.545	30	10.059	18	10.413	6	10.527
41	9.579	29	10.093	17	10.429	5	10.412
40	9.631	28	10.126	16	10.443	4	10.201
39	9.683	27	10.158	15	10.465	3	9.918
38	9.734	26	10.189	14	10.489	2	9.389
37	9.785	25	10.221	13	10.513	1	8.781
36	9.836	24	10.253	12	10.539	0	7.618
35	9.879	23	10.285	11	10.566		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
41	9.896	30	10.461	19	10.847	8	11.114
40	9.958	29	10.500	18	10.870	7	11.080
39	10.019	28	10.539	17	10.890	6	11.011
38	10.079	27	10.576	16	10.908	5	10.910
37	10.139	26	10.612	15	10.934	4	10.689
36	10.198	25	10.649	14	10.961	3	10.384
35	10.249	24	10.686	13	10.989	2	9.823
34	10.296	23	10.722	12	11.017	1	9.184
33	10.341	22	10.758	11	11.047	0	7.971
32	10.382	21	10.793	10	11.090		
31	10.420	20	10.821	9	11.116		

Older Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
42	9.785	31	10.355	20	10.738	9	10.971
41	9.847	30	10.393	19	10.762	8	10.978
40	9.907	29	10.428	18	10.784	7	10.982
39	9.966	28	10.461	17	10.803	6	10.936
38	10.023	27	10.491	16	10.828	5	10.826
37	10.078	26	10.528	15	10.854	4	10.599
36	10.130	25	10.566	14	10.879	3	10.293
35	10.180	24	10.603	13	10.905	2	9.736
34	10.227	23	10.642	12	10.931	1	9.121
33	10.272	22	10.681	11	10.947	0	7.912
32	10.315	21	10.711	10	10.961		

Older Age Forty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
43	9.677	32	10.247	21	10.628	10	10.877
42	9.740	31	10.283	20	10.655	9	10.897
41	9.799	30	10.316	19	10.678	8	10.916
40	9.855	29	10.345	18	10.699	7	10·904
39	9.908	28	10.371	17	10.723	6	10.850
38	9.957	27	10.408	16	10.747	5	10.733
37	10.009	26	10.446	15	10.770	4	10.504
36	10.061	25	10.485	14	10.793	3	10.198
35	10.111	24	10.526	13	10.815	2	9.665
34	10.159	23	10.568	12	10.836	1	9.049
33	10.207	22	10.600	11	10.857	0	7.847

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	8.617	37	9.326	24	9.735	11	10.002
49	8.715	36	9.370	23	9.762	10	10.028
48	8.802	35	9.414	22	9.787	9	10.036
47	8.878	34	9.448	21	9.810	8	10.028
46	8.942	33	9.479	20	9.833	7	10.000
45	8.994	32	9.507	19	9.853	6	9.947
44	9.049	31	9.532	18	9.870	5	9.850
43	9.096	30	9.554	17	9.886	4	9.638
42	9.137	29	9.584	16	9.901	3	9.361
41	9.170	28	9.614	15	9.913	2	8.865
40	9.197	27	9.645	14	9.933	1	8.305
39	9.239	26	9.676	13	9.955	0	7.216
38	9.282	25	9.708	12	9.978		

Older Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	8.384	38	9.136	25	9.534	12	9.800
50	8.490	37	9.177	24	9.561	11	9.823
49	8.585	36	9.219	23	9.587	10	9.842
48	8.670	35	9.254	22	9.614	9	9.855
47	8.744	34	9.286	21	9.640	8	9.851
46	8.808	33	9.316	20	9.660	7	9.826
45	8.866	32	9.341	19	9.678	6	9.775
44	8.916	31	9.370	18	9.693	5	9.658
43	8.957	30	9.399	17	9.706	4	9.464
42	8.989	29	9.427	16	9.717	3	9.194
41	9.012	28	9.454	15	9.736	2	8.711
40	9.053	27	9.481	14	9.756	1	8.164
39	9.094	26	9.507	13	9.777	0	7.086

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	8.147	39	8.945	26	9.325	13	9.594
51	8.260	38	8.983	25	9.353	12	9.614
50	8.363	37	9.020	24	9.381	11	9.625
49	8.456	36	9.055	23	9.409	10	9.633
48	8.540	35	9.088	22	9.439	9	9.639
47	8.614	34	9.120	21	9.460	8	9.642
46	8.677	33	9.151	20	9.479	7	9.642
45	8.730	32	9.180	19	9.495	6	9.575
44	8.772	31	9.207	18	9.509	5	9.464
43	8.805	30	9.233	17	9.520	4	9.283
42	8.827	29	9.256	16	9.538	3	9.022
41	8.867	28	9.279	15	9.556	2	8.549
40	8.907	27	9.299	14	9.575	1	8.001
						0	6.952

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
53	7.905	42	8.678	31	9.031	20	9.290	9	9.457
52	8.024	41	8.716	30	9.052	19	9.305	8	9.470
51	8.134	40	8.751	29	9.071	18	9.318	7	9.426
50	8.236	39	8.784	28	9.087	17	9.335	6	9.373
49	8.327	38	8.815	27	9.113	16	9.351	5	9.270
48	8.410	37	8.849	26	9.140	15	9.368	4	9.095
47	8.478	36	8.883	25	9.169	14	9.384	3	8.840
46	8.535	35	8.916	24	9.199	13	9.400	2	8.359
45	8.581	34	8.949	23	9.231	12	9.415	1	7.836
44	8.615	33	8.982	22	9.253	11	9.429	0	6.815
43	8.639	32	9.008	21	9.273	10	9.443		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
54	7.656	43	8.485	32	8.824	21	9.077	10	9.251
53	7.778	42	8.521	31	8.844	20	9.094	9	9.271
52	7.893	41	8.553	30	8.861	19	9.109	8	9.240
51	7.999	40	8.581	29	8.876	18	9.125	7	9.212
50	8.098	39	8.605	28	8.901	17	9.140	6	9.170
49	8.189	38	8.638	27	8.927	16	9.154	5	9.076
48	8.262	37	8.672	26	8.955	15	9.168	4	8.900
47	8.325	36	8.706	25	8.985	14	9.180	3	8.626
46	8.376	35	8.740	24	9.016	13	9.197	2	8.170
45	8.416	34	8.775	23	9.038	12	9.214	1	7.669
44	8.445	33	8.801	22	9.059	11	9.232	0	6.674

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
55	7.397	43	8.319	31	8.650	19	8.907	7	9.000
54	7.521	42	8.348	30	8.666	18	8.921	6	8.965
53	7.638	41	8.371	29	8.689	17	8.933	5	8.880
52	7.749	40	8.389	28	8.714	16	8.944	4	8.671
51	7.854	39	8.421	27	8.738	15	8.953	3	8.416
50	7.952	38	8.454	26	8.764	14	8.969	2	7.983
49	8.031	37	8.488	25	8.790	13	8.987	1	7.501
48	8.100	36	8.523	24	8.812	12	9.006	0	6.530
47	8.158	35	8.559	23	8.833	11	9.026		
46	8.206	34	8.585	22	8.853	10	9.047		
45	8.243	33	8.609	21	8.873	9	9.033		
44	8.284	32	8.631	20	8.891	8	9.015		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	8.617	37	9.326	24	9.735	11	10.002
49	8.715	36	9.370	23	9.762	10	10.028
48	8.802	35	9.414	22	9.787	9	10.036
47	8.878	34	9.448	21	9.810	8	10.028
46	8.942	33	9.479	20	9.833	7	10.000
45	8.994	32	9.507	19	9.853	6	9.947
44	9.049	31	9.532	18	9.870	5	9.850
43	9.096	30	9.554	17	9.886	4	9.638
42	9.137	29	9.584	16	9.901	3	9.361
41	9.170	28	9.614	15	9.913	2	8.865
40	9.197	27	9.645	14	9.933	1	8.305
39	9.239	26	9.676	13	9.955	0	7.216
38	9.282	25	9.708	12	9.978		

Older Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	8.384	38	9.136	25	9.534	12	9.800
50	8.490	37	9.177	24	9.561	11	9.823
49	8.585	36	9.219	23	9.587	10	9.842
48	8.670	35	9.254	22	9.614	9	9.855
47	8.744	34	9.286	21	9.640	8	9.851
46	8.808	33	9.316	20	9.660	7	9.826
45	8.866	32	9.341	19	9.678	6	9.775
44	8.916	31	9.370	18	9.693	5	9.658
43	8.957	30	9.399	17	9.706	4	9.464
42	8.989	29	9.427	16	9.717	3	9.194
41	9.012	28	9.454	15	9.736	2	8.711
40	9.053	27	9.481	14	9.756	1	8.164
39	9.094	26	9.507	13	9.777	0	7.086

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	8.147	39	8.945	26	9.325	13	9.594
51	8.260	38	8.983	25	9.353	12	9.614
50	8.363	37	9.020	24	9.381	11	9.625
49	8.456	36	9.055	23	9.409	10	9.633
48	8.540	35	9.088	22	9.439	9	9.639
47	8.614	34	9.120	21	9.460	8	9.642
46	8.677	33	9.151	20	9.479	7	9.642
45	8.730	32	9.180	19	9.495	6	9.575
44	8.772	31	9.207	18	9.509	5	9.464
43	8.805	30	9.233	17	9.520	4	9.283
42	8.827	29	9.256	16	9.538	3	9.022
41	8.867	28	9.279	15	9.556	2	8.549
40	8.907	27	9.299	14	9.575	1	8.001
						0	6.952

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 6 per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
53	7.905	42	8.678	31	9.031	20	9.290	9	9.457
52	8.024	41	8.716	30	9.052	19	9.305	8	9.470
51	8.134	40	8.751	29	9.071	18	9.318	7	9.426
50	8.236	39	8.784	28	9.087	17	9.335	6	9.373
49	8.327	38	8.815	27	9.113	16	9.351	5	9.270
48	8.410	37	8.849	26	9.140	15	9.368	4	9.095
47	8.478	36	8.883	25	9.169	14	9.384	3	8.840
46	8.535	35	8.916	24	9.199	13	9.400	2	8.359
45	8.581	34	8.949	23	9.231	12	9.415	1	7.836
44	8.615	33	8.982	22	9.253	11	9.429	0	6.815
43	8.639	32	9.008	21	9.273	10	9.443		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
54	7.656	43	8.485	32	8.824	21	9.077	10	9.251
53	7.778	42	8.521	31	8.844	20	9.094	9	9.271
52	7.893	41	8.553	30	8.861	19	9.109	8	9.240
51	7.999	40	8.581	29	8.876	18	9.125	7	9.212
50	8.098	39	8.605	28	8.901	17	9.140	6	9.170
49	8.189	38	8.638	27	8.927	16	9.154	5	9.076
48	8.262	37	8.672	26	8.955	15	9.168	4	8.900
47	8.325	36	8.706	25	8.985	14	9.180	3	8.626
46	8.376	35	8.740	24	9.016	13	9.197	2	8.170
45	8.416	34	8.775	23	9.038	12	9.214	1	7.669
44	8.445	33	8.801	22	9.059	11	9.232	0	6.674

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
55	7.397	43	8.319	31	8.650	19	8.907	7	9.000
54	7.521	42	8.348	30	8.666	18	8.921	6	8.965
53	7.638	41	8.371	29	8.689	17	8.933	5	8.880
52	7.749	40	8.389	28	8.714	16	8.944	4	8.671
51	7.854	39	8.421	27	8.738	15	8.953	3	8.416
50	7.952	38	8.454	26	8.764	14	8.969	2	7.983
49	8.031	37	8.488	25	8.790	13	8.987	1	7.501
48	8.100	36	8.523	24	8.812	12	9.006	0	6.530
47	8.158	35	8.559	23	8.833	11	9.026		
46	8.206	34	8.585	22	8.853	10	9.047		
45	8.243	33	8.609	21	8.873	9	9.033		
44	8.284	32	8.631	20	8.891	8	9.015		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
56	7.130	44	8.111	32	8.430	20	8.681	8	8.796
55	7.251	43	8.140	31	8.449	19	8.694	7	8.789
54	7.369	42	8.161	30	8.471	18	8.706	6	8.758
53	7.483	41	8.175	29	8.493	17	8.716	5	8.684
52	7.593	40	8.206	28	8.515	16	8.724	4	8.450
51	7.699	39	8.237	27	8.537	15	8.739	3	8.211
50	7.784	38	8.269	26	8.558	14	8.755	2	7.798
49	7.860	37	8.301	25	8.580	13	8.772	1	7.331
48	7.927	36	8.334	24	8.601	12	8.790	0	6.365
47	7.984	35	8.361	23	8.622	11	8.809		
46	8.031	34	8.385	22	8.644	10	8.812		
45	8.075	33	8.408	21	8.665	9	8.803		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
57	6.853	45	7.894	33	8.200	21	8.444	9	8.582
56	6.972	44	7.923	32	8.223	20	8.459	8	8.583
55	7.090	43	7.944	31	8.244	19	8.471	7	8.581
54	7.208	42	7.956	30	8.264	18	8.482	6	8.538
53	7.324	41	7.985	29	8.282	17	8.490	5	8.488
52	7.440	40	8.014	28	8.300	16	8.504	4	8.235
51	7.531	39	8.043	27	8.316	15	8.518	3	8.012
50	7.614	38	8.072	26	8.337	14	8.533	2	7.615
49	7.687	37	8.101	25	8.359	13	8.549	1	7.150
48	7.752	36	8.127	24	8.381	12	8.565	0	6.205
47	7.808	35	8.153	23	8.404	11	8.573		
46	7.855	34	8.177	22	8.428	10	8.579		

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	6.577	46	7.671	34	7.968	22	8.206	10	8.353
57	6.694	45	7.703	33	7.994	21	8.221	9	8.363
56	6.812	44	7.726	32	8.014	20	8.235	8	8.373
55	6.932	43	7.739	31	8.032	19	8.246	7	8.379
54	7.055	42	7.767	30	8.047	18	8.255	6	8.323
53	7.179	41	7.794	29	8.061	17	8.268	5	8.290
52	7.275	40	7.819	28	8.073	16	8.281	4	8.027
51	7.363	39	7.843	27	8.093	15	8.294	3	7.817
50	7.443	38	7.866	26	8.115	14	8.306	2	7.437
49	7.514	37	7.892	25	8.138	13	8.319	1	6.972
48	7.578	36	7.917	24	8.163	12	8.331	0	6.050
47	7.629	35	7.943	23	8.189	11	8.342		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Fifty-Nine Years.

	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	6.322	47	7.450	35	7.744	23	7.977	11	8.125
	6.436	46	7.487	34	7.772	22	7.992	10	8.139
	6.553	45	7.514	33	7.791	21	8.007	9	8.155
	6.674	44	7.532	32	7.809	20	8.019	8	8.189
	6.798	43	7.560	31	7.824	19	8.030	7	8.177
	6.926	42	7.585	30	7.836	18	8.042	6	8.111
	7.025	41	7.607	29	7.847	17	8.054	5	8.090
	7.117	40	7.626	28	7.866	16	8.064	4	7.826
	7.201	39	7.642	27	7.887	15	8.075	3	7.646
	7.278	38	7.666	26	7.910	14	8.084	2	7.259
	7.348	37	7.692	25	7.934	13	8.097	1	6.798
	7.404	36	7.718	24	7.959	12	8.110	0	5.900

Older Age Sixty Years.

	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	6.097	47	7.282	34	7.585	21	7.808	8	8.001
	6.208	46	7.315	33	7.603	20	7.822	7	7.974
	6.322	45	7.339	32	7.619	19	7.834	6	7.902
	6.440	44	7.368	31	7.633	18	7.844	5	7.890
	6.561	43	7.392	30	7.645	17	7.853	4	7.661
	6.685	42	7.411	29	7.663	16	7.861	3	7.470
4	6.785	41	7.426	28	7.682	15	7.867	2	7.081
3	6.879	40	7.436	27	7.702	14	7.880	1	6.627
2	6.968	39	7.459	26	7.723	13	7.893	0	5.755
1	7.050	38	7.484	25	7.744	12	7.908		
0	7.127	37	7.510	24	7.761	11	7.925		
9	7.188	36	7.537	23	7.778	10	7.942		
8	7.239	35	7.565	22	7.793	9	7.984		

Older Age Sixty-One Years.

	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	5.919	48	7.096	35	7.402	22	7.622	9	7.805
0	6.026	47	7.137	34	7.421	21	7.639	8	7.808
9	6.135	46	7.170	33	7.439	20	7.651	7	7.771
8	6.244	45	7.201	32	7.455	19	7.661	6	7.698
7	6.355	44	7.226	31	7.470	18	7.670	5	7.699
6	6.466	43	7.244	30	7.487	17	7.677	4	7.489
5	6.565	42	7.257	29	7.504	16	7.682	3	7.290
4	6.660	41	7.263	28	7.521	15	7.694	2	6.903
3	6.751	40	7.285	27	7.538	14	7.706	1	6.459
2	6.839	39	7.308	26	7.555	13	7.719	0	5.640
1	6.923	38	7.331	25	7.572	12	7.734		
	6.989	37	7.356	24	7.589	11	7.749		
	7.047	36	7.382	23	7.606	10	7.777		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
62	5.748	42	7.096	22	7.457	2	6.724
61	5.852	41	7.116	21	7.470	1	6.320
60	5.953	40	7.137	20	7.480	0	5.517
59	6.053	39	7.158	19	7.489		
58	6.151	38	7.180	18	7.497		
57	6.246	37	7.202	17	7.502		
56	6.343	36	7.222	16	7.513		
55	6.439	35	7.241	15	7.524		
54	6.534	34	7.260	14	7.535		
53	6.628	33	7.278	13	7.547		
52	6.721	32	7.296	12	7.560		
51	6.793	31	7.312	11	7.566		
50	6.856	30	7.327	10	7.569		
49	6.912	29	7.341	9	7.571		
48	6.961	28	7.355	8	7.570		
47	7.001	27	7.367	7	7.568		
46	7.035	26	7.384	6	7.528		
45	7.061	25	7.401	5	7.502		
44	7.080	24	7.419	4	7.308		
43	7.092	23	7.438	3	7.106		

Older Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
63	5 576	43	6.928	23	7.269	3	6.918
62	5.677	42	6.947	22	7.282	2	6.564
61	5.772	41	6.966	21	7.294	1	6.172
60	5.861	40	6.984	20	7.304	0	5.387
59	5.945	39	7.001	19	7.312		
58	6.024	38	7.018	18	7.318		
57	6.119	37	7.037	17	7.328		
56	6.215	36	7.057	16	7.338		
55	6.313	35	7.076	15	7.347		
54	6.413	34	7.097	14	7.357		
53	6.515	33	7.117	13	7.367		
52	6.591	32	7.132	12	7.376		
51	6.660	31	7.146	11	7.384		
50	6.722	30	7.158	10	7.393		
49	6.777	29	7.168	9	7.400		
48	6.824	28	7.177	8	7.408		
47	6.861	27	7.193	7	7.386		
46	6.890	26	7.210	6	7.347		
45	6.911	25	7.228	5	7.298		
44	6.924	24	7.248	4	7.121		

alue of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Sixty-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
5.390	44	6.749	24	7.069	4	6.925
5.490	43	6.768	23	7.083	3	6.734
5.581	42	6.784	22	7.095	2	6.394
5.664	41	6.799	21	7.106	1	6.014
5.739	40	6.811	20	7.115	0	5.250
5.805	39	6.822	19	7.123		
5.898	38	6.840	18	7.132		
5.993	37	6.859	17	7.140		
6.092	36	6.880	16	7.148		
6.194	35	6.901	15	7.155		
6.299	34	6.924	14	7.162		
6.378	33	6.939	13	7.172		
6.450	32	6.952	12	7.183		
6.516	31	6.963	11	7.194		
6.575	30	6.972	10	7.206		
6.627	29	6.979	9	7.219		
6.668	28	6.994	8	7.209		
6.701	27	7.011	7	7.192		
6.725	26	7.029	6	7.154		
6.741	25	7.048	5	7.088		

Older Age Sixty-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
5.197	45	6.562	25	6.859	5	6.871
5.298	44	6.581	24	6.872	4	6.716
5.388	43	6.596	23	6.885	3	6.541
5.467	42	6.608	22	6.897	2	6.215
5.536	41	6.617	21	6.908	1	5.847
5.594	40	6.622	20	6.918	0	5.105
5.683	39	6.639	19	6.927		
5.776	38	6.657	18	6.934		
5.872	37	6.677	17	6.940		
5.971	36	6.698	16	6.946		
6.073	35	6.721	15	6.950		
6.153	34	6.736	14	6.960		
6.227	33	6.750	13	6.971		
6.296	32	6.762	12	6.983		
6.359	31	6.772	11	6.996		
6.417	30	6.781	10	7.010		
6.462	29	6.795	9	7.001		
6.499	28	6.810	8	7.002		
6.528	27	6.826	7	6.988		
6.549	26	6.842	6	6.949		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 6 per Cent.)

Older Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
66	4.991	46	6.362	26	6.638	6	6.733
65	5.096	45	6.382	25	6.651	5	6.633
64	5.190	44	6.398	24	6.664	4	6.502
63	5.271	43	6.409	23	6.677	3	6.340
62	5.341	42	6.415	22	6.689	2	6.026
61	5.398	41	6.416	21	6.702	1	5.670
60	5.483	40	6.431	20	6.711	0	4.938
59	5.570	39	6.448	19	6.718		
58	5.657	38	6.466	18	6.724		
57	5.746	37	6.486	17	6.728		
56	5.836	36	6.507	16	6.731		
55	5.914	35	6.522	15	6.740		
54	5.988	34	6.536	14	6.749		
53	6.059	33	6.549	13	6.759		
52	6.126	32	6.561	12	6.771		
51	6.190	31	6.572	11	6.783		
50	6.239	30	6.585	10	6.768		
49	6.281	29	6.598	9	6.778		
48	6.315	28	6.612	8	6.785		
47	6.342	27	6.625	7	6.773		

Older Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
67	4.770	47	6.149	27	6.403	7	6.546
66	4.880	46	6.171	26	6.415	6	6.467
65	4.977	45	6.188	25	6.428	5	6.397
64	5.063	44	6.198	24	6.442	4	6.284
63	5.137	43	6.203	23	6.456	3	6.131
62	5.198	42	6.202	22	6.471	2	5.827
61	5.279	41	6.216	21	6.480	1	5.453
60	5.358	40	6.230	20	6.488	0	4.771
59	5.435	39	6.246	19	6.494		
58	5.511	38	6.262	18	6.498		
57	5.585	37	6.280	17	6.501		
56	5.660	36	6.295	16	6.509		
55	5.734	35	6.309	15	6.517		
54	5.808	34	6.323	14	6.526		
53	5.880	33	6.337	13	6.536		
52	5.952	32	6.351	12	6.546		
51	6.005	31	6.363	11	6.550		
50	6.051	30	6.374	10	6.551		
49	6.091	29	6.385	9	6.551		
48	6.123	28	6.394	8	6.550		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Sixty-Eight Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	4.537	48	5.922	28	6.158	8	6.326
7	4.650	47	5.946	27	6.170	7	6.260
6	4.751	46	5.964	26	6.183	6	6.208
5	4.842	45	5.976	25	6.197	5	6.161
4	4.921	44	5.981	24	6.213	4	6.060
3	4.990	43	5.980	23	6.229	3	5.913
2	5.067	42	5.993	22	6.239	2	5.576
1	5.139	41	6.006	21	6.247	1	5.241
	5.207	40	6.018	20	6.253	0	4.604
	5.270	39	6.031	19	6.258		
	5.328	38	6.043	18	6.262		
	5.400	37	6.057	17	6.269		
	5.474	36	6.071	16	6.276		
	5.549	35	6.086	15	6.283		
	5.626	34	6.101	14	6.291		
	5.704	33	6.116	13	6.298		
	5.760	32	6.127	12	6.304		
	5.810	31	6.137	11	6.310		
	5.854	30	6.145	10	6.316		
	5.891	29	6.152	9	6.321		

Older Age Sixty-Nine Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9	4.289	49	5.676	29	5.905	9	6.079
8	4.402	48	5.703	28	5.916	8	6.032
57	4.506	47	5.723	27	5.929	7	5.987
66	4.602	46	5.737	26	5.942	6	5.957
65	4.689	45	5.745	25	5.957	5	5.927
64	4.767	44	5.746	24	5.973	4	5.832
63	4.842	43	5.757	23	5.983	3	5.640
62	4.909	42	5.768	22	5.992	2	5.336
61	4.969	41	5.777	21	5.999	1	5.036
60	5.023	40	5.785	20	6.005	0	4.438
59	5.069	39	5.793	19	6.010		
8	5.138	38	5.806	18	6.016		
7	5.211	37	5.822	17	6.022		
6	5.286	36	5.835	16	6.027		
	5.364	35	5.851	15	6.032		
	5.445	34	5.868	14	6.037		
	5.503	33	5.878	13	6.044		
	5.555	32	5.887	12	6.052		
	5.601	31	5.895	11	6.060		
	5.641	30	5.901	10	6.069		

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 6 per Cent.)

Older Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
70	4.028	50	5.415	30	5.648	10	5.
69	4.139	49	5.445	29	5.658	9	5.
68	4.245	48	5.468	28	5.669	8	5.
67	4.346	47	5.486	27	5.681	7	5.
66	4.442	46	5.497	26	5.693	6	5.
65	4.534	45	5.502	25	5.706	5	5.
64	4.608	44	5.513	24	5.715	4	5.
63	4.674	43	5.522	23	5.724	3	5.
62	4.730	42	5.529	22	5.732	2	5.
61	4.778	41	5.533	21	5.739	1	4.
60	4.816	40	5.536	20	5.746	0	4.
59	4.882	39	5.548	19	5.752		
58	4.950	38	5.561	18	5.757		
57	5.022	37	5.575	17	5.761		
56	5.096	36	5.591	16	5.764		
55	5.174	35	5.609	15	5.767		
54	5.232	34	5.620	14	5.774		
53	5.284	33	5.629	13	5.782		
52	5.333	32	5.637	12	5.791		
51	5.376	31	5.643	11	5.800		

Older Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
71	3.748	51	5.135	31	5.378	11	5.
70	3.856	50	5.168	30	5.387	10	5.
69	3.964	49	5.195	29	5.396	9	5.
68	4.071	48	5.216	28	5.406	8	5.
67	4.178	47	5.232	27	5.415	7	5.
66	4.285	46	5.242	26	5.425	6	5.
65	4.362	45	5.254	25	5.434	5	5.
64	4.429	44	5.262	24	5.443	4	5.
63	4.486	43	5.268	23	5.452	3	5.
62	4.532	42	5.270	22	5.460	2	4.
61	4.569	41	5.269	21	5.469	1	4.
60	4.630	40	5.279	20	5.475	0	4.
59	4.692	39	5.290	19	5.479		
58	4.756	38	5.303	18	5.482		
57	4.821	37	5.318	17	5.485		
56	4.888	36	5.334	16	5.486		
55	4.943	35	5.345	15	5.492		
54	4.995	34	5.354	14	5.499		
53	5.045	33	5.363	13	5.506		
52	5.091	32	5.371	12	5.515		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Seventy-Two Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
3.485	52	4.867	32	5.119	12	5.252
3.589	51	4.903	31	5.127	11	5.254
3.696	50	4.933	30	5.135	10	5.255
3.807	49	4.958	29	5.142	9	5.254
3.922	48	4.978	28	5.149	8	5.252
4.041	47	4.993	27	5.155	7	5.248
4.121	46	5.006	26	5.164	6	5.252
4.191	45	5.015	25	5.173	5	5.195
4.250	44	5.020	24	5.182	4	5.058
4.299	43	5.020	23	5.192	3	4.913
4.337	42	5.017	22	5.202	2	4.687
4.394	41	5.025	21	5.208	1	4.455
4.450	40	5.035	20	5.213	0	3.912
4.505	39	5.046	19	5.217		
4.559	38	5.058	18	5.219		
4.612	37	5.071	17	5.221		
4.665	36	5.081	16	5.226		
4.716	35	5.091	15	5.232		
4.767	34	5.101	14	5.238		
4.818	33	5.110	13	5.245		

Older Age Seventy-Three Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
3.254	53	4.622	33	4.883	13	5.004
3.353	52	4.660	32	4.890	12	5.008
3.458	51	4.693	31	4.897	11	5.012
3.569	50	4.721	30	4.902	10	5.016
3.686	49	4.745	29	4.907	9	5.019
3.810	48	4.763	28	4.910	8	5.022
3.892	47	4.778	27	4.918	7	5.050
3.965	46	4.788	26	4.927	6	5.032
4.028	45	4.793	25	4.937	5	4.965
4.081	44	4.794	24	4.947	4	4.831
4.125	43	4.790	23	4.959	3	4.702
4.178	42	4.797	22	4.965	2	4.513
4.228	41	4.805	21	4.971	1	4.274
4.275	40	4.813	20	4.975	0	3.746
4.318	39	4.822	19	4.978		
4.359	38	4.832	18	4.980		
4.408	37	4.842	17	4.985		
4.460	36	4.851	16	4.989		
4.513	35	4.862	15	4.994		
4.567	34	4.872	14	4.999		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
74	3.058	54	4.402	34	4.671	14	4.784
73	3.152	53	4.442	33	4.678	13	4.789
72	3.253	52	4.477	32	4.684	12	4.794
71	3.360	51	4.507	31	4.689	11	4.800
70	3.474	50	4.533	30	4.692	10	4.806
69	3.594	49	4.555	29	4.695	9	4.813
68	3.677	48	4.571	28	4.703	8	4.847
67	3.753	47	4.583	27	4.711	7	4.855
66	3.820	46	4.590	26	4.721	6	4.820
65	3.880	45	4.592	25	4.732	5	4.747
64	3.931	44	4.589	24	4.743	4	4.620
63	3.983	43	4.595	23	4.750	3	4.539
62	4.029	42	4.602	22	4.755	2	4.342
61	4.070	41	4.608	21	4.760	1	4.098
60	4.105	40	4.613	20	4.763	0	3.589
59	4.136	39	4.619	19	4.766		
58	4.184	38	4.628	18	4.770		
57	4.235	37	4.637	17	4.774		
56	4.288	36	4.648	16	4.777		
55	4.344	35	4.659	15	4.781		

Older Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
75	2.916	55	4.217	35	4.498	15	4.604
74	3.004	54	4.257	34	4.505	14	4.609
73	3.097	53	4.294	33	4.512	13	4.614
72	3.194	52	4.326	32	4.517	12	4.621
71	3.296	51	4.355	31	4.521	11	4.628
70	3.403	50	4.380	30	4.524	10	4.636
69	3.486	49	4.399	29	4.531	9	4.644
68	3.564	48	4.413	28	4.539	8	4.671
67	3.638	47	4.422	27	4.547	7	4.663
66	3.706	46	4.427	26	4.556	6	4.615
65	3.770	45	4.427	25	4.565	5	4.541
64	3.822	44	4.433	24	4.572	4	4.458
63	3.867	43	4.438	23	4.578	3	4.376
62	3.905	42	4.442	22	4.583	2	4.172
61	3.935	41	4.444	21	4.588	1	3.929
60	3.959	40	4.446	20	4.592	0	3.441
59	4.005	39	4.454	19	4.596		
58	4.054	38	4.463	18	4.599		
57	4.106	37	4.473	17	4.601		
56	4.160	36	4.485	16	4.603		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 6 per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
76	2.779	56	4.032	36	4.326	16	4.430
75	2.861	55	4.071	35	4.333	15	4.434
74	2.944	54	4.108	34	4.340	14	4.439
73	3.029	53	4.142	33	4.346	13	4.444
72	3.116	52	4.174	32	4.351	12	4.450
71	3.205	51	4.203	31	4.356	11	4.457
70	3.287	50	4.224	30	4.362	10	4.468
69	3.369	49	4.241	29	4.369	9	4.474
68	3.450	48	4.254	28	4.375	8	4.493
67	3.529	47	4.262	27	4.382	7	4.473
66	3.608	46	4.266	26	4.389	6	4.418
65	3.663	45	4.273	25	4.395	5	4.377
64	3.710	44	4.277	24	4.402	4	4.295
63	3.749	43	4.280	23	4.408	3	4.211
62	3.779	42	4.280	22	4.414	2	4.006
61	3.800	41	4.279	21	4.420	1	3.766
60	3.843	40	4.286	20	4.424	0	3.320
59	3.888	39	4.294	19	4.427		
58	3.934	38	4.303	18	4.429		
57	3.982	37	4.314	17	4.430		

Older Age Seventy-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
77	2.661	57	3.856	37	4.167	17	4.270
76	2.736	56	3.894	36	4.174	16	4.274
75	2.810	55	3.931	35	4.181	15	4.278
74	2.883	54	3.967	34	4.188	14	4.282
73	2.954	53	4.003	33	4.195	13	4.287
72	3.025	52	4.038	32	4.201	12	4.293
71	3.105	51	4.062	31	4.207	11	4.294
70	3.188	50	4.082	30	4.212	10	4.294
69	3.274	49	4.098	29	4.217	9	4.292
68	3.362	48	4.109	28	4.221	8	4.290
67	3.452	47	4.117	27	4.225	7	4.286
66	3.511	46	4.125	26	4.231	6	4.244
65	3.561	45	4.129	25	4.237	5	4.210
64	3.602	44	4.131	24	4.244	4	4.130
63	3.634	43	4.131	23	4.251	3	4.045
62	3.657	42	4.127	22	4.259	2	3.841
61	3.697	41	4.133	21	4.263	1	3.622
60	3.737	40	4.139	20	4.266	0	3.199
59	3.777	39	4.147	19	4.268		
58	3.817	38	4.157	18	4.270		

Value of £1 per Annum during the joint Continuance of Tw
(Carlisle 6 per Cent.)

Older Age Seventy-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Ag
78	2.540	58	3.678	38	4.003	1
77	2.610	57	3.714	37	4.010	1
76	2.678	56	3.752	36	4.017	1
75	2.740	55	3.790	35	4.025	1
74	2.799	54	3.830	34	4.032	1
73	2.855	53	3.870	33	4.040	1
72	2.932	52	3.896	32	4.045	1
71	3.015	51	3.919	31	4.049	1
70	3.102	50	3.937	30	4.053	1
69	3.193	49	3.952	29	4.055	
68	3.290	48	3.962	28	4.057	
67	3.351	47	3.971	27	4.063	
66	3.404	46	3.976	26	4.069	
65	3.449	45	3.978	25	4.076	
64	3.485	44	3.977	24	4.084	
63	3.512	43	3.972	23	4.093	
62	3.550	42	3.977	22	4.097	
61	3.585	41	3.982	21	4.101	
60	3.618	40	3.988	20	4.104	
59	3.649	39	3.995	19	4.105	

Older Age Seventy-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	A
79	2.390	59	3.483	39	3.815	1
78	2.457	58	3.518	38	3.821	1
77	2.520	57	3.554	37	3.828	1
76	2.578	56	3.593	36	3.836	1
75	2.633	55	3.635	35	3.845	1
74	2.683	54	3.678	34	3.854	1
73	2.757	53	3.706	33	3.859	1
72	2.836	52	3.730	32	3.863	1
71	2.920	51	3.750	31	3.865	1
70	3.010	50	3.766	30	3.867	1
69	3.104	49	3.779	29	3.868	
68	3.166	48	3.789	28	3.873	
67	3.221	47	3.796	27	3.880	
66	3.269	46	3.799	26	3.887	
65	3.310	45	3.799	25	3.894	
64	3.343	44	3.795	24	3.903	
63	3.379	43	3.799	23	3.908	
62	3.411	42	3.803	22	3.911	
61	3.439	41	3.807	21	3.914	
60	3.463	40	3.811	20	3.917	

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Eighty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
80	2.260	59	3.343	38	3.654	17	3.750
79	2.327	58	3.378	37	3.662	16	3.751
78	2.389	57	3.416	36	3.671	15	3.752
77	2.447	56	3.456	35	3.681	14	3.755
76	2.499	55	3.499	34	3.686	13	3.759
75	2.546	54	3.527	33	3.690	12	3.764
74	2.614	53	3.552	32	3.693	11	3.769
73	2.686	52	3.574	31	3.696	10	3.775
72	2.762	51	3.592	30	3.697	9	3.751
71	2.842	50	3.607	29	3.702	8	3.749
70	2.925	49	3.619	28	3.707	7	3.743
69	2.987	48	3.627	27	3.713	6	3.719
68	3.044	47	3.632	26	3.720	5	3.697
67	3.096	46	3.633	25	3.727	4	3.622
66	3.143	45	3.631	24	3.731	3	3.538
65	3.186	44	3.634	23	3.735	2	3.368
64	3.222	43	3.637	22	3.739	1	3.189
63	3.252	42	3.639	21	3.742	0	2.836
62	3.277	41	3.641	20	3.744		
61	3.296	40	3.642	19	3.746		
60	3.310	39	3.648	18	3.748		

Older Age Eighty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
81	2.105	61	3.133	41	3.454	21	3.551
80	2.172	60	3.163	40	3.459	20	3.553
79	2.235	59	3.195	39	3.465	19	3.555
78	2.293	58	3.228	38	3.472	18	3.556
77	2.347	57	3.263	37	3.480	17	3.556
76	2.397	56	3.300	36	3.489	16	3.556
75	2.460	55	3.327	35	3.494	15	3.559
74	2.532	54	3.352	34	3.499	14	3.563
73	2.589	53	3.374	33	3.592	13	3.567
72	2.655	52	3.395	32	3.506	12	3.572
71	2.723	51	3.413	31	3.508	11	3.577
70	2.784	50	3.426	30	3.512	10	3.568
69	2.843	49	3.436	29	3.517	9	3.560
68	2.900	48	3.443	28	3.521	8	3.566
67	2.956	47	3.447	27	3.526	7	3.565
66	3.010	46	3.448	26	3.531	6	3.543
65	3.048	45	3.452	25	3.535	5	3.517
64	3.079	44	3.454	24	3.539	4	3.448
63	3.104	43	3.455	23	3.543	3	3.367
62	3.122	42	3.455	22	3.547	2	3.211
						1	3.045

Value of £1 per Annum during the joint Continuance of Two Li
(Carlisle 6 per Cent.)

Older Age Eighty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
82	1.977	62	2.976	42	3.285	22
81	2.043	61	3.003	41	3.289	21
80	2.106	60	3.031	40	3.294	20
79	2.164	59	3.059	39	3.300	19
78	2.219	58	3.087	38	3.307	18
77	2.270	57	3.116	37	3.315	17
76	2.326	56	3.142	36	3.320	16
75	2.381	55	3.167	35	3.325	15
74	2.435	54	3.191	34	3.329	14
73	2.488	53	3.214	33	3.333	13
72	2.540	52	3.237	32	3.337	12
71	2.598	51	3.252	31	3.341	11
70	2.658	50	3.264	30	3.344	10
69	2.720	49	3.274	29	3.347	9
68	2.783	48	3.280	28	3.350	8
67	2.847	47	3.283	27	3.353	7
66	2.887	46	3.287	26	3.357	6
65	2.920	45	3.289	25	3.361	5
64	2.946	44	3.290	24	3.366	4
63	2.964	43	3.288	23	3.371	3
						2

Older Age Eighty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
83	1.838	63	2.814	43	3.112	23
82	1.901	62	2.839	42	3.115	22
81	1.962	61	2.862	41	3.118	21
80	2.022	60	2.884	40	3.123	20
79	2.080	59	2.906	39	3.128	19
78	2.137	58	2.926	38	3.134	18
77	2.183	57	2.950	37	3.139	17
76	2.236	56	2.976	36	3.143	16
75	2.281	55	3.001	35	3.148	15
74	2.323	54	3.028	34	3.153	14
73	2.362	53	3.055	33	3.158	13
72	2.418	52	3.072	32	3.161	12
71	2.477	51	3.086	31	3.164	11
70	2.539	50	3.097	30	3.166	10
69	2.605	49	3.105	29	3.168	9
68	2.675	48	3.110	28	3.169	8
67	2.717	47	3.115	27	3.173	7
66	2.752	46	3.117	26	3.177	6
65	2.779	45	3.118	25	3.182	5
64	2.800	44	3.116	24	3.188	4
						3

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Eighty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
84	1.702	64	2.652	44	2.942	24	3.015
83	1.761	63	2.675	43	2.944	23	3.018
82	1.820	62	2.696	42	2.947	22	3.020
81	1.878	61	2.714	41	2.950	21	3.022
80	1.936	60	2.730	40	2.953	20	3.023
79	1.994	59	2.744	39	2.957	19	3.023
78	2.042	58	2.767	38	2.961	18	3.025
77	2.086	57	2.792	37	2.966	17	3.026
76	2.127	56	2.818	36	2.971	16	3.028
75	2.165	55	2.846	35	2.976	15	3.029
74	2.199	54	2.876	34	2.982	14	3.031
73	2.252	53	2.894	33	2.985	13	3.033
72	2.308	52	2.909	32	2.988	12	3.036
71	2.369	51	2.921	31	2.989	11	3.039
70	2.434	50	2.931	30	2.991	10	3.042
69	2.502	49	2.937	29	2.991	9	3.045
68	2.544	48	2.943	28	2.995	8	3.069
67	2.580	47	2.946	27	2.999	7	3.051
66	2.610	46	2.947	26	3.004	6	3.014
65	2.634	45	2.946	25	3.009	5	2.979
						4	2.928

Older Age Eighty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
85	1.549	65	2.480	45	2.763	25	2.826
84	1.609	64	2.503	44	2.765	24	2.829
83	1.669	63	2.522	43	2.767	23	2.831
82	1.729	62	2.537	42	2.768	22	2.833
81	1.789	61	2.549	41	2.770	21	2.835
80	1.850	60	2.558	40	2.771	20	2.836
79	1.898	59	2.580	39	2.775	19	2.837
78	1.941	58	2.603	38	2.779	18	2.839
77	1.980	57	2.629	37	2.784	17	2.840
76	2.015	56	2.656	36	2.790	16	2.840
75	2.046	55	2.686	35	2.797	15	2.841
74	2.094	54	2.704	34	2.800	14	2.843
73	2.145	53	2.720	33	2.803	13	2.846
72	2.199	52	2.733	32	2.804	12	2.849
71	2.255	51	2.744	31	2.806	11	2.853
70	2.315	50	2.752	30	2.806	10	2.857
69	2.356	49	2.759	29	2.809	9	2.911
68	2.394	48	2.763	28	2.813	8	2.919
67	2.427	47	2.765	27	2.817	7	2.882
66	2.455	46	2.765	26	2.821	6	2.838
						5	2.799

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Eighty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
86	1.414	64	2.369	42	2.609	20	2.672
85	1.468	63	2.384	41	2.608	19	2.673
84	1.524	62	2.395	40	2.611	18	2.674
83	1.583	61	2.401	39	2.615	17	2.674
82	1.643	60	2.421	38	2.620	16	2.674
81	1.706	59	2.442	37	2.626	15	2.676
80	1.754	58	2.465	36	2.632	14	2.678
79	1.797	57	2.489	35	2.635	13	2.681
78	1.838	56	2.515	34	2.638	12	2.684
77	1.874	55	2.533	33	2.640	11	2.688
76	1.907	54	2.548	32	2.642	10	2.731
75	1.951	53	2.562	31	2.643	9	2.778
74	1.996	52	2.575	30	2.646	8	2.769
73	2.042	51	2.585	29	2.649	7	2.712
72	2.089	50	2.593	28	2.652	6	2.662
71	2.138	49	2.599	27	2.655		
70	2.179	48	2.603	26	2.659		
69	2.218	47	2.605	25	2.662		
68	2.256	46	2.605	24	2.664		
67	2.291	45	2.607	23	2.667		
66	2.325	44	2.608	22	2.669		
65	2.349	43	2.609	21	2.671		

Older Age Eighty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
87	1.304	65	2.239	43	2.477	21	2.537
86	1.349	64	2.255	42	2.475	20	2.538
85	1.400	63	2.267	41	2.478	19	2.538
84	1.458	62	2.273	40	2.481	18	2.538
83	1.521	61	2.291	39	2.485	17	2.538
82	1.590	60	2.310	38	2.490	16	2.540
81	1.637	59	2.329	37	2.496	15	2.542
80	1.681	58	2.349	36	2.499	14	2.544
79	1.722	57	2.370	35	2.502	13	2.547
78	1.760	56	2.387	34	2.505	12	2.550
77	1.794	55	2.403	33	2.507	11	2.550
76	1.833	54	2.419	32	2.509	10	2.550
75	1.872	53	2.433	31	2.512	9	2.548
74	1.910	52	2.447	30	2.514	8	2.546
73	1.948	51	2.457	29	2.516	7	2.543
72	1.985	50	2.464	28	2.519		
71	2.025	49	2.470	27	2.521		
70	2.066	48	2.473	26	2.524		
69	2.107	47	2.475	25	2.526		
68	2.149	46	2.477	24	2.529		
67	2.191	45	2.478	23	2.532		
66	2.217	44	2.478	22	2.535		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.249	65	2.171	42	2.400	19	2.457
87	1.284	64	2.185	41	2.401	18	2.457
86	1.326	63	2.194	40	2.404	17	2.458
85	1.377	62	2.211	39	2.408	16	2.460
84	1.436	61	2.227	38	2.412	15	2.462
83	1.502	60	2.243	37	2.415	14	2.464
82	1.548	59	2.258	36	2.418	13	2.466
81	1.593	58	2.273	35	2.422	12	2.467
80	1.636	57	2.290	34	2.425	11	2.468
79	1.678	56	2.307	33	2.428	10	2.469
78	1.718	55	2.324	32	2.430	9	2.469
77	1.755	54	2.342	31	2.432	8	2.469
76	1.790	53	2.360	30	2.434		
75	1.822	52	2.371	29	2.435		
74	1.853	51	2.381	28	2.436		
73	1.881	50	2.388	27	2.439		
72	1.920	49	2.393	26	2.442		
71	1.962	48	2.396	25	2.445		
70	2.006	47	2.399	24	2.449		
69	2.052	46	2.401	23	2.453		
68	2.100	45	2.401	22	2.455		
67	2.129	44	2.400	21	2.456		
66	2.153	43	2.397	20	2.457		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.176	66	2.070	43	2.306	20	2.362
88	1.202	65	2.087	42	2.307	19	2.362
87	1.238	64	2.099	41	2.310	18	2.363
86	1.283	63	2.115	40	2.312	17	2.364
85	1.338	62	2.130	39	2.315	16	2.366
84	1.403	61	2.143	38	2.318	15	2.367
83	1.447	60	2.155	37	2.321	14	2.368
82	1.491	59	2.165	36	2.325	13	2.370
81	1.534	58	2.182	35	2.329	12	2.371
80	1.577	57	2.199	34	2.333	11	2.373
79	1.619	56	2.218	33	2.335	10	2.375
78	1.655	55	2.238	32	2.337	9	2.377
77	1.688	54	2.259	31	2.338		
76	1.718	53	2.272	30	2.339		
75	1.746	52	2.282	29	2.339		
74	1.772	51	2.291	28	2.342		
73	1.811	50	2.298	27	2.345		
72	1.852	49	2.302	26	2.348		
71	1.896	48	2.306	25	2.352		
70	1.943	47	2.308	24	2.356		
69	1.993	46	2.308	23	2.358		
68	2.023	45	2.307	22	2.360		
67	2.049	44	2.304	21	2.361		

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 6 per Cent.)

Older Age Ninety Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
90	1.025	67	1.914	44	2.161	21
89	1.043	66	1.936	43	2.162	20
88	1.075	65	1.954	42	2.163	19
87	1.120	64	1.971	41	2.164	18
86	1.180	63	1.984	40	2.165	17
85	1.253	62	1.996	39	2.168	16
84	1.299	61	2.004	38	2.171	15
83	1.344	60	2.010	37	2.175	14
82	1.390	59	2.026	36	2.179	13
81	1.435	58	2.043	35	2.184	12
80	1.481	57	2.062	34	2.186	11
79	1.517	56	2.083	33	2.189	10
78	1.550	55	2.105	32	2.190	
77	1.580	54	2.118	31	2.191	
76	1.607	53	2.130	30	2.191	
75	1.631	52	2.139	29	2.193	
74	1.667	51	2.147	28	2.196	
73	1.705	50	2.153	27	2.199	
72	1.745	49	2.158	26	2.202	
71	1.787	48	2.161	25	2.206	
70	1.831	47	2.162	24	2.208	
69	1.862	46	2.162	23	2.210	
68	1.889	45	2.160	22	2.211	

Older Age Ninety-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.
91	0.987	68	1.863	45	2.144	22
90	0.998	67	1.892	44	2.145	21
89	1.022	66	1.920	43	2.146	20
88	1.061	65	1.940	42	2.146	19
87	1.112	64	1.956	41	2.145	18
86	1.178	63	1.968	40	2.147	17
85	1.222	62	1.977	39	2.151	16
84	1.268	61	1.982	38	2.154	15
83	1.316	60	1.998	37	2.159	14
82	1.365	59	2.015	36	2.164	13
81	1.417	58	2.033	35	2.167	12
80	1.456	57	2.052	34	2.169	11
79	1.493	56	2.072	33	2.171	
78	1.526	55	2.086	32	2.172	
77	1.557	54	2.099	31	2.173	
76	1.585	53	2.110	30	2.175	
75	1.620	52	2.120	29	2.178	
74	1.656	51	2.128	28	2.180	
73	1.693	50	2.134	27	2.183	
72	1.730	49	2.139	26	2.186	
71	1.768	48	2.142	25	2.188	
70	1.801	47	2.143	24	2.190	
69	1.833	46	2.143	23	2.192	

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 6 per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
92	1.051	72	1.788	52	2.204	32	2.258
91	1.057	71	1.824	51	3.212	31	2.260
90	1.071	70	1.860	50	2.219	30	2.262
89	1.094	69	1.898	49	2.224	29	2.264
88	1.127	68	1.937	48	2.227	28	2.266
87	1.168	67	1.976	47	2.228	27	2.268
86	1.208	66	2.000	46	2.230	26	2.270
85	1.255	65	2.019	45	2.231	25	2.273
84	1.306	64	2.034	44	2.230	24	2.275
83	1.364	63	2.044	43	2.229	23	2.278
82	1.427	62	2.050	42	2.227	22	2.281
81	1.471	61	2.066	41	2.229	21	2.282
80	1.513	60	2.083	40	2.232	20	2.283
79	1.552	59	2.100	39	2.236	19	2.284
78	1.589	58	2.117	38	2.240	18	2.284
77	1.623	57	2.135	37	2.245	17	2.283
76	1.659	56	2.150	36	2.248	16	2.284
75	1.693	55	2.165	35	2.251	15	2.286
74	1.726	54	2.178	34	2.253	14	2.288
73	1.758	53	2.192	33	2.256	13	2.290
						12	2.293

Older Age Ninety-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
93	1.148	73	1.824	53	2.296	33	2.358
92	1.150	72	1.862	52	2.307	32	2.360
91	1.156	71	1.904	51	2.316	31	2.362
90	1.165	70	1.948	50	2.322	30	2.363
89	1.178	69	1.995	49	2.327	29	2.364
88	1.194	68	2.045	48	2.329	28	2.365
87	1.228	67	2.074	47	2.331	27	2.368
86	1.270	66	2.097	46	2.332	26	2.370
85	1.320	65	2.115	45	2.332	25	2.374
84	1.378	64	2.128	44	2.330	24	2.377
83	1.445	63	2.136	43	2.327	23	2.381
82	1.493	62	2.152	42	2.329	22	2.383
81	1.540	61	2.168	41	2.331	21	2.384
80	1.586	60	2.182	40	2.334	20	2.385
79	1.631	59	2.197	39	2.338	19	2.385
78	1.676	58	2.210	38	2.342	18	2.385
77	1.712	57	2.226	37	2.345	17	2.386
76	1.745	56	2.243	36	2.348	16	2.388
75	1.775	55	2.260	35	2.352	15	2.389
74	1.801	54	2.278	34	2.355	14	2.391
						13	2.393

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.218	74	1.832	54	2.339	34	2.409
93	1.218	73	1.872	53	2.352	33	2.411
92	1.216	72	1.915	52	2.362	32	2.413
91	1.210	71	1.963	51	2.370	31	2.413
90	1.202	70	2.014	50	2.376	30	2.413
89	1.190	69	2.069	49	2.379	29	2.413
88	1.217	68	2.101	48	2.382	28	2.416
87	1.256	67	2.128	47	2.384	27	2.419
86	1.305	66	2.150	46	2.384	26	2.422
85	1.365	65	2.166	45	2.382	25	2.426
84	1.436	64	2.178	44	2.379	24	2.431
83	1.486	63	2.194	43	2.380	23	2.433
82	1.537	62	2.209	42	2.382	22	2.435
81	1.588	61	2.221	41	2.384	21	2.436
80	1.640	60	2.232	40	2.386	20	2.437
79	1.692	59	2.241	39	2.389	19	2.437
78	1.729	58	2.258	38	2.392	18	2.438
77	1.762	57	2.276	37	2.396	17	2.439
76	1.790	56	2.296	36	2.400	16	2.440
75	1.813	55	2.317	35	2.404	15	2.441
						14	2.442

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.295	75	1.846	55	2.362	35	2.439
94	1.299	74	1.887	54	2.376	34	2.442
93	1.285	73	1.930	53	2.388	33	2.443
92	1.255	72	1.976	52	2.397	32	2.445
91	1.207	71	2.024	51	2.405	31	2.445
90	1.143	70	2.075	50	2.410	30	2.445
89	1.163	69	2.109	49	2.414	29	2.447
88	1.200	68	2.139	48	2.416	28	2.450
87	1.254	67	2.165	47	2.417	27	2.453
86	1.325	66	2.187	46	2.415	26	2.457
85	1.413	65	2.205	45	2.412	25	2.461
84	1.467	64	2.222	44	2.413	24	2.463
83	1.520	63	2.236	43	2.414	23	2.465
82	1.574	62	2.247	42	2.415	22	2.466
81	1.627	61	2.254	41	2.416	21	2.467
80	1.680	60	2.259	40	2.417	20	2.468
79	1.721	59	2.276	39	2.420	19	2.469
78	1.759	58	2.294	38	2.424	18	2.470
77	1.792	57	2.315	37	2.428	17	2.470
76	1.821	56	2.338	36	2.433	16	2.471
						15	2.471

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.336	76	1.822	56	2.326	36	2.407
95	1.354	75	1 861	55	2.340	35	2.410
94	1.343	74	1.900	54	2.352	34	2.412
93	1.303	73	1.941	53	2.362	33	2.413
92	1.235	72	1.982	52	2.370	32	2.414
91	1.138	71	2.025	51	2.377	31	2.415
90	1.218	70	2.060	50	2.382	30	2.417
89	1.281	69	2.093	49	2.386	29	2.420
88	1.327	68	2.124	48	2.387	28	2.422
87	1.356	67	2.153	47	2.388	27	2.425
86	1.368	66	2.180	46	2.386	26	2.428
85	1.420	65	2.199	45	2.387	25	2.430
84	1.473	64	2.212	44	2.387	24	2.432
83	1.529	63	2.223	43	2.387	23	2.433
82	1.586	62	2.229	42	2.387	22	2.435
81	1.645	61	2.231	41	2.386	21	2.436
80	1.688	60	2.247	40	2.389	20	2.437
79	1.728	59	2.264	39	2.392	19	2.439
78	1.763	58	2.283	38	2.396	18	2.438
77	1.795	57	2.304	37	2.401	17	2.439
						16	2.438

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.312	77	1.751	57	2.211	37	2.295
96	1.355	76	1.785	56	2.224	36	2.298
95	1.360	75	1.818	55	2.236	35	2.300
94	1.330	74	1.851	54	2.247	34	2.302
93	1.262	73	1.883	53	2.257	33	2.303
92	1.158	72	1.914	52	2.266	32	2.304
91	1.162	71	1.947	51	2.272	31	2.306
90	1.178	70	1.981	50	2.277	30	2.307
89	1.206	69	2.015	49	2.279	29	2.309
88	1.246	68	2.049	48	2.281	28	2.311
87	1.297	67	2.083	47	2.280	27	2.312
86	1.341	66	2.103	46	2.281	26	2.314
85	1.391	65	2.118	45	2.281	25	2.316
84	1.446	64	2.128	44	2.280	24	2.318
83	1.507	63	2.133	43	2.279	23	2.321
82	1.573	62	2.134	42	2.277	22	2.323
81	1.616	61	2.147	41	2.279	21	2.324
80	1.656	60	2·162	40	2.282	20	2.325
79	1.692	59	2.177	39	2.285	19	2.325
78	1.723	58	2.194	38	2.290	18	2.325
						17	2.324

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.299	78	1.673	58	2.078	38	2.163
97	1.370	77	1.702	57	2.090	37	2.165
96	1.395	76	1.730	56	2.101	36	2.167
95	1.374	75	1.755	55	2.113	35	2.169
94	1.306	74	1.778	54	2.124	34	2.171
93	1.192	73	1.799	53	2.136	33	2.172
92	1.191	72	1.830	52	2.143	32	2.173
91	1.197	71	1.862	51	2.148	31	2.174
90	1.210	70	1.897	50	2.151	30	2.175
89	1.230	69	1.933	49	2.153	29	2.176
88	1.256	68	1.971	48	2.153	28	2.176
87	1.290	67	1.991	47	2.154	27	2.178
86	1.330	66	2.006	46	2.154	26	2.180
85	1.378	65	2.016	45	2.153	25	2.182
84	1.433	64	2.021	44	2.152	24	2.185
83	1.494	63	2.021	43	2.149	23	2.188
82	1.535	62	2.032	42	2.150	22	2.189
81	1.573	61	2.043	41	2.152	21	2.190
80	1.609	60	2.054	40	2.155	20	2.190
79	1.642	59	2.066	39	2.159	19	2.190
						18	2.189

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.231	79	1.533	59	1.873	39	1.950
98	1.219	78	1.558	58	1.883	38	1.952
97	1.207	77	1.580	57	1.893	37	1.954
96	1.195	76	1.600	56	1.904	36	1.956
95	1.183	75	1.617	55	1.916	35	1.958
94	1.171	74	1.632	54	1.929	34	1.960
93	1.166	73	1.659	53	1.936	33	1.961
92	1.164	72	1.688	52	1.941	32	1.962
91	1.164	71	1.719	51	1.944	31	1.962
90	1.167	70	1.753	50	1.946	30	1.962
89	1.172	69	1.789	49	1.946	29	1.962
88	1.196	68	1.807	48	1.947	28	1.964
87	1.229	67	1.821	47	1.947	27	1.965
86	1.269	66	1.830	46	1.946	26	1.968
85	1.318	65	1.835	45	1.945	25	1.970
84	1.374	64	1.836	44	1.942	24	1.973
83	1.409	63	1.844	43	1.943	23	1.974
82	1.443	62	1.852	42	1.944	22	1.975
81	1.475	61	1.859	41	1.945	21	1.975
80	1.505	60	1.866	40	1.947	20	1.975
						19	1.974

alue of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
100	0.948	79	1.271	58	1.512	37	1.562
99	0.963	78	1.288	57	1.521	36	1.564
98	0.978	77	1.301	56	1.531	35	1.566
97	0.992	76	1.313	55	1.542	34	1.567
96	1.007	75	1.321	54	1.547	33	1.567
95	1.022	74	1.340	53	1.551	32	1.568
94	1.018	73	1.362	52	1.554	31	1.567
93	1.007	72	1.385	51	1.556	30	1.567
92	0.989	71	1.410	50	1.556	29	1.568
91	0.965	70	1.437	49	1.557	28	1.569
90	0.935	69	1.451	48	1.557	27	1.571
89	0.950	68	1.462	47	1.557	26	1.573
88	0.975	67	1.470	46	1.556	25	1.575
87	1.011	66	1.475	45	1.554	24	1.576
86	1.058	65	1.477	44	1.554	23	1.576
85	1.116	64	1.483	43	1.555	22	1.576
84	1.147	63	1.487	42	1.555	21	1.576
83	1.176	62	1.491	41	1.556	20	1.576
82	1.203	61	1.495	40	1.557		
81	1.228	60	1.497	39	1.558		
80	1.252	59	1.504	38	1.560		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
101	0.662	80	0.957	59	1.121	38	1.153
100	0.693	79	0.969	58	1.126	37	1.154
99	0.724	78	0.980	57	1.133	36	1.156
98	0.755	77	0.988	56	1.140	35	1.157
97	0.786	76	0.995	55	1.143	34	1.157
96	0.817	75	1.008	54	1.146	33	1.157
95	0.818	74	1.021	53	1.148	32	1.157
94	0.809	73	1.035	52	1.149	31	1.157
93	0.791	72	1.050	51	1.149	30	1.158
92	0.762	71	1.066	50	1.150	29	1.159
91	0.723	70	1.076	49	1.150	28	1.160
90	0.730	69	1.084	48	1.150	27	1.161
89	0.746	68	1.090	47	1.150	26	1.162
88	0.770	67	1.095	46	1.149	25	1.163
87	0.803	66	1.099	45	1.149	24	1.163
86	0.844	65	1.103	44	1.149	23	1.163
85	0.866	64	1.106	43	1.150	22	1.163
84	0.886	63	1.109	42	1.150	21	1.163
83	0.906	62	1.110	41	1.150		
82	0.925	61	1.111	40	1.151		
81	0.943	60	1.115	39	1.152		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.

(Carlisle 6 per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
102	.375	81	.625	60	.715	39	.732
101	.410	80	.632	59	.718	38	.733
100	.445	79	.639	58	.721	37	.734
99	.479	78	.643	57	.724	36	.735
98	.514	77	.647	56	.726	35	.735
97	.549	76	.653	55	.727	34	.735
96	.557	75	.660	54	.729	33	.735
95	.557	74	.667	53	.729	32	.735
94	.547	73	.673	52	.730	31	.735
93	.529	72	.680	51	.731	30	.736
92	.502	71	.685	50	.731	29	.736
91	.504	70	.690	49	.731	28	.737
90	.510	69	.695	48	.731	27	.737
89	.520	68	.699	47	.731	26	.737
88	.534	67	.703	46	.731	25	.738
87	.552	66	.706	45	.731	24	.738
86	.564	65	.708	44	.731	23	.738
85	.576	64	.709	43	.731	22	.738
84	.589	63	.710	42	.731		
83	.602	62	.710	41	.731		
82	.616	61	.712	40	.732		

Older Age One Hundred and Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
103	.105	82	.270	61	.304	40	.311
102	.133	81	.273	60	.305	39	.311
101	.162	80	.276	59	.306	38	.311
100	.190	79	.278	58	.307	37	.311
99	.219	78	.280	57	.308	36	.311
98	.247	77	.282	56	.308	35	.311
97	.257	76	.284	55	.309	34	.311
96	.260	75	.286	54	.309	33	.311
95	.257	74	.288	53	.309	32	.311
94	.248	73	.290	52	.309	31	.311
93	.233	72	.292	51	.310	30	.312
92	.233	71	.294	50	.310	29	.312
91	.235	70	.296	49	.310	28	.312
90	.237	69	.298	48	.310	27	.312
89	.241	68	.300	47	.310	26	.312
88	.245	67	.301	46	.310	25	.312
87	.249	66	.302	45	.310	24	.312
86	.253	65	.302	44	.310	23	.312
85	.257	64	.302	43	.310		
84	.262	63	.302	42	.310		
83	.267	62	.303	41	.310		

of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

er Age 0 Years.		Older Age One Year.	
ge.	Value.	Age.	Value.
0	9.629	1	12.921
		0	10.346

r Age Two Years.		Older Age Three Years.	
ge.	Value.	Age.	Value.
2	14.821	3	16.544
1	13.428	2	15.180
0	11.063	1	13.935
		0	11.779

Age Four Years.		Older Age Five Years.	
ge.	Value.	Age.	Value.
4	17.500	5	18.199
3	16.746	4	17.602
2	15.539	3	16.948
1	14.442	2	15.898
0	12.496	1	14.949
		0	13.213

Age Six Years.			Older Age Seven Years.			
ie.	Age.	Value.	Age.	Value.	Age.	Value.
525	2	16.257	7	18.654	3	17.352
217	1	15.456	6	18.492	2	16.616
704	0	13.224	5	18.235	1	15.426
150			4	17.806	0	13.235

Value of £1 per Annum during the joint Continuance of Two Lives
(Carlisle 3½ per Cent.)

Older Age Eight Years.				Older Age Nine Years			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
8	18.651	3	17.555	9	18.560	4	18
7	18.590	2	16.555	8	18.569	3	17
6	18.460	1	15.395	7	18.526	2	16
5	18.255	0	13.247	6	18.427	1	15
4	17.909			5	18.273	0	13

Older Age Ten Years.				Older Age Eleven Yea			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
10	18.407	4	17.917	11	18.223	5	18
9	18.468	3	17.391	10	18.313	4	17
8	18.486	2	16.434	9	18.377	3	17
7	18.461	1	15.334	8	18.404	2	16
6	18.394	0	13.269	7	18.397	1	15
5	18.291			6	18.361	0	13

Older Age Twelve Years.				Older Age Thirteen Yea			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
12	18.044	5	18.093	13	17.864	6	18
11	18.102	4	17.730	12	16.939	5	17
10	18.160	3	17.228	11	17.014	4	17
9	18.217	2	16.312	10	18.089	3	17
8	18.275	1	15.220	9	18.164	2	16
7	18.333	0	13.123	8	18.239	1	15
6	18.263			7	18.237	0	13

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

der Age Fourteen Years.			Older Age Fifteen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.682	6	18.066	15	17.505	7	18.044
17.766	5	17.896	14	17.591	6	17.968
17.850	4	17.542	13	17.677	5	17.797
17.934	3	17.054	12	17.763	4	17.449
18.018	2	16.134	11	17.849	3	16.962
18.102	1	15.051	10	17.935	2	16.046
18.145	0	12.977	9	17.011	1	14.967
18.141			8	18.052	0	12.904

lder Age Sixteen Years.			Older Age Seventeen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.344	7	17.948	17	17.195	8	17.801
17.428	6	17.870	16	17.276	7	17.852
17.512	5	17.703	15	17.357	6	17.773
17.595	4	17.356	14	17.437	5	17.608
17.679	3	16.870	13	17.518	4	17.262
17.763	2	15.957	12	17.599	3	16.778
17.845	1	14.883	11	17.650	2	15.868
16.919	0	12.834	10	17.700	1	14.800
17.958			9	17.751	0	12.765

der Age Eighteen Years.			Older Age Nineteen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.045	8	17.771	19	16.890	9	17.645
17.123	7	17.751	18	16.965	8	17.665
17.201	6	17.676	17	17.040	7	17.650
17.278	5	17.514	16	17.115	6	17.580
17.356	4	17.169	15	17.190	5	17.419
17.434	3	16.686	14	17.265	4	17.076
17.501	2	15.775	13	17.341	3	16.582
17.569	1	14.717	12	17.417	2	15.682
17.636	0	12.695	11	17.493	1	14.625
17.704			10	17.569	0	12.626

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.218	74	1.832	54	2.339	34	2.409
93	1.218	73	1.872	53	2.352	33	2.411
92	1.216	72	1.915	52	2.362	32	2.413
91	1.210	71	1.963	51	2.370	31	2.413
90	1.202	70	2.014	50	2.376	30	2.413
89	1.190	69	2.069	49	2.379	29	2.413
88	1.217	68	2.101	48	2.382	28	2.416
87	1.256	67	2.128	47	2.384	27	2.419
86	1.305	66	2.150	46	2.384	26	2.422
85	1.365	65	2.166	45	2.382	25	2.426
84	1.436	64	2.178	44	2.379	24	2.431
83	1.486	63	2.194	43	2.380	23	2.433
82	1.537	62	2.209	42	2.382	22	2.435
81	1.588	61	2.221	41	2.384	21	2.436
80	1.640	60	2.232	40	2.386	20	2.437
79	1.692	59	2.241	39	2.389	19	2.437
78	1.729	58	2.258	38	2.392	18	2.438
77	1.762	57	2.276	37	2.396	17	2.439
76	1.790	56	2.296	36	2.400	16	2.440
75	1.813	55	2.317	35	2.404	15	2.441
						14	2.442

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.295	75	1.846	55	2.362	35	2.439
94	1.299	74	1.887	54	2.376	34	2.442
93	1.285	73	1.930	53	2.388	33	2.443
92	1.255	72	1.976	52	2.397	32	2.445
91	1.207	71	2.024	51	2.405	31	2.445
90	1.143	70	2.075	50	2.410	30	2.445
89	1.163	69	2.109	49	2.414	29	2.447
88	1.200	68	2.139	48	2.416	28	2.450
87	1.254	67	2.165	47	2.417	27	2.453
86	1.325	66	2.187	46	2.415	26	2.457
85	1.413	65	2.205	45	2.412	25	2.461
84	1.467	64	2.222	44	2.413	24	2.463
83	1.520	63	2.236	43	2.414	23	2.465
82	1.574	62	2.247	42	2.415	22	2.466
81	1.627	61	2.254	41	2.416	21	2.467
80	1.680	60	2.259	40	2.417	20	2.468
79	1.721	59	2.276	39	2.420	19	2.469
78	1.759	58	2.294	38	2.424	18	2.470
77	1.792	57	2.315	37	2.428	17	2.470
76	1.821	56	2.338	36	2.433	16	2.471
						15	2.471

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.336	76	1.822	56	2.326	36	2.407
95	1.354	75	1.861	55	2.340	35	2.410
94	1.343	74	1.900	54	2.352	34	2.412
93	1.303	73	1.941	53	2.362	33	2.413
92	1.235	72	1.982	52	2.370	32	2.414
91	1.138	71	2.025	51	2.377	31	2.415
90	1.218	70	2.060	50	2.382	30	2.417
89	1.281	69	2.093	49	2.386	29	2.420
88	1.327	68	2.124	48	2.387	28	2.422
87	1.356	67	2.153	47	2.388	27	2.425
86	1.368	66	2.180	46	2.386	26	2.428
85	1.420	65	2.199	45	2.387	25	2.430
84	1.473	64	2.212	44	2.387	24	2.432
83	1.529	63	2.223	43	2.387	23	2.433
82	1.586	62	2.229	42	2.387	22	2.435
81	1.645	61	2.231	41	2.386	21	2.436
80	1.688	60	2.247	40	2.389	20	2.437
79	1.728	59	2.264	39	2.392	19	2.438
78	1.763	58	2.283	38	2.396	18	2.438
77	1.795	57	2.304	37	2.401	17	2.438
						16	2.438

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.312	77	1.751	57	2.211	37	2.295
96	1.355	76	1.785	56	2.224	36	2.298
95	1.360	75	1.818	55	2.236	35	2.300
94	1.330	74	1.851	54	2.247	34	2.302
93	1.262	73	1.883	53	2.257	33	2.303
92	1.158	72	1.914	52	2.266	32	2.304
91	1.162	71	1.947	51	2.272	31	2.306
90	1.178	70	1.981	50	2.277	30	2.307
89	1.206	69	2.015	49	2.279	29	2.309
88	1.246	68	2.049	48	2.281	28	2.311
87	1.297	67	2.083	47	2.280	27	2.312
86	1.341	66	2.103	46	2.281	26	2.314
85	1.391	65	2.118	45	2.281	25	2.316
84	1.446	64	2.128	44	2.280	24	2.318
83	1.507	63	2.133	43	2.279	23	2.321
82	1.573	62	2.134	42	2.277	22	2.323
81	1.616	61	2.147	41	2.279	21	2.324
80	1.656	60	2.162	40	2.282	20	2.325
79	1.692	59	2.177	39	2.285	19	2.325
78	1.723	58	2.194	38	2.290	18	2.325
						17	2.324

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.299	78	1.673	58	2.078	38	2.163
97	1.370	77	1.702	57	2.090	37	2.165
96	1.395	76	1.730	56	2.101	36	2.167
95	1.374	75	1.755	55	2.113	35	2.169
94	1.306	74	1.778	54	2.124	34	2.171
93	1.192	73	1.799	53	2.136	33	2.172
92	1.191	72	1.830	52	2.143	32	2.173
91	1.197	71	1.862	51	2.148	31	2.174
90	1.210	70	1.897	50	2.151	30	2.175
89	1.230	69	1.933	49	2.153	29	2.176
88	1.256	68	1.971	48	2.153	28	2.176
87	1.290	67	1.991	47	2.154	27	2.178
86	1.330	66	2.006	46	2.154	26	2.180
85	1.378	65	2.016	45	2.153	25	2.182
84	1.433	64	2.021	44	2.152	24	2.185
83	1.494	63	2.021	43	2.149	23	2.188
82	1.535	62	2.032	42	2.150	22	2.189
81	1.573	61	2.043	41	2.152	21	2.190
80	1.609	60	2.054	40	2.155	20	2.190
79	1.642	59	2.066	39	2.159	19	2.190
						18	2.189

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.231	79	1.533	59	1.873	39	1.950
98	1.219	78	1.558	58	1.883	38	1.952
97	1.207	77	1.580	57	1.893	37	1.954
96	1.195	76	1.600	56	1.904	36	1.956
95	1.183	75	1.617	55	1.916	35	1.958
94	1.171	74	1.632	54	1.929	34	1.960
93	1.166	73	1.659	53	1.936	33	1.961
92	1.164	72	1.688	52	1.941	32	1.962
91	1.164	71	1.719	51	1.944	31	1.962
90	1.167	70	1.753	50	1.946	30	1.962
89	1.172	69	1.789	49	1.946	29	1.962
88	1.196	68	1.807	48	1.947	28	1.964
87	1.229	67	1.821	47	1.947	27	1.965
86	1.269	66	1.830	46	1.946	26	1.968
85	1.318	65	1.835	45	1.945	25	1.970
84	1.374	64	1.836	44	1.942	24	1.973
83	1.409	63	1.844	43	1.943	23	1.974
82	1.443	62	1.852	42	1.944	22	1.975
81	1.475	61	1.859	41	1.945	21	1.975
80	1.505	60	1.866	40	1.947	20	1.975
						19	1.974

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
100	0.948	79	1.271	58	1.512	37	1.562
99	0.963	78	1.288	57	1.521	36	1.564
98	0.978	77	1.301	56	1.531	35	1.566
97	0.992	76	1.313	55	1.542	34	1.567
96	1.007	75	1.321	54	1.547	33	1.567
95	1.022	74	1.340	53	1.551	32	1.568
94	1.018	73	1.362	52	1.554	31	1.567
93	1.007	72	1.385	51	1.556	30	1.567
92	0.989	71	1.410	50	1.556	29	1.568
91	0.965	70	1.437	49	1.557	28	1.569
90	0.935	69	1.451	48	1.557	27	1.571
89	0.950	68	1.462	47	1.557	26	1.573
88	0.975	67	1.470	46	1.556	25	1.575
87	1.011	66	1.475	45	1.554	24	1.576
86	1.058	65	1.477	44	1.554	23	1.576
85	1.116	64	1.483	43	1.555	22	1.576
84	1.147	63	1.487	42	1.555	21	1.576
83	1.176	62	1.491	41	1.556	20	1.576
82	1.203	61	1.495	40	1.557		
81	1.228	60	1.497	39	1.558		
80	1.252	59	1.504	38	1.560		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
101	0.662	80	0.957	59	1.121	38	1.153
100	0.693	79	0.969	58	1.126	37	1.154
99	0.724	78	0.980	57	1.133	36	1.156
98	0.755	77	0.988	56	1.140	35	1.157
97	0.786	76	0.995	55	1.143	34	1.157
96	0.817	75	1.008	54	1.146	33	1.157
95	0.818	74	1.021	53	1.148	32	1.157
94	0.809	73	1.035	52	1.149	31	1.157
93	0.791	72	1.050	51	1.149	30	1.158
92	0.762	71	1.066	50	1.150	29	1.159
91	0.723	70	1.076	49	1.150	28	1.160
90	0.730	69	1.084	48	1.150	27	1.161
89	0.746	68	1.090	47	1.150	26	1.162
88	0.770	67	1.095	46	1.149	25	1.163
87	0.803	66	1.099	45	1.149	24	1.163
86	0.844	65	1.103	44	1.149	23	1.163
85	0.866	64	1.106	43	1.150	22	1.163
84	0.886	63	1.109	42	1.150	21	1.163
83	0.906	62	1.110	41	1.150		
82	0.925	61	1.111	40	1.151		
81	0.943	60	1.115	39	1.152		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 6 per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
102	.375	81	.625	60	.715	39	.732
101	.410	80	.632	59	.718	38	.733
100	.445	79	.639	58	.721	37	.734
99	.479	78	.643	57	.724	36	.735
98	.514	77	.647	56	.726	35	.735
97	.549	76	.653	55	.727	34	.735
96	.557	75	.660	54	.729	33	.735
95	.557	74	.667	53	.729	32	.735
94	.547	73	.673	52	.730	31	.735
93	.529	72	.680	51	.731	30	.736
92	.502	71	.685	50	.731	29	.736
91	.504	70	.690	49	.731	28	.737
90	.510	69	.695	48	.731	27	.737
89	.520	68	.699	47	.731	26	.737
88	.534	67	.703	46	.731	25	.738
87	.552	66	.706	45	.731	24	.738
86	.564	65	.708	44	.731	23	.738
85	.576	64	.709	43	.731	22	.738
84	.589	63	.710	42	.731		
83	.602	62	.710	41	.731		
82	.616	61	.712	40	.732		

Older Age One Hundred and Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
103	.105	82	.270	61	.304	40	.311
102	.133	81	.273	60	.305	39	.311
101	.162	80	.276	59	.306	38	.311
100	.190	79	.278	58	.307	37	.311
99	.219	78	.280	57	.308	36	.311
98	.247	77	.282	56	.308	35	.311
97	.257	76	.284	55	.309	34	.311
96	.260	75	.286	54	.309	33	.311
95	.257	74	.288	53	.309	32	.311
94	.248	73	.290	52	.309	31	.311
93	.233	72	.292	51	.310	30	.312
92	.233	71	.294	50	.310	29	.312
91	.235	70	.296	49	.310	28	.312
90	.237	69	.298	48	.310	27	.312
89	.241	68	.300	47	.310	26	.312
88	.245	67	.301	46	.310	25	.312
87	.249	66	.302	45	.310	24	.312
86	.253	65	.302	44	.310	23	.312
85	.257	64	.302	43	.310		
84	.262	63	.302	42	.310		
83	.267	62	.303	41	.310		

f £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

r Age 0 Years.		Older Age One Year.	
e.	Value.	Age.	Value.
0	9.629	1	12.921
		0	10.346

Age Two Years.		Older Age Three Years.	
e.	Value.	Age.	Value.
2	14.821	3	16.544
1	13.428	2	15.180
0	11.063	1	13.935
		0	11.779

Age Four Years.		Older Age Five Years.	
e.	Value.	Age.	Value.
4	17.500	5	18.199
3	16.746	4	17.602
2	15.539	3	16.948
1	14.442	2	15.898
0	12.496	1	14.949
		0	13.213

Age Six Years.			Older Age Seven Years.			
e.	Age.	Value.	Age.	Value.	Age.	Value.
25	2	16.257	7	18.654	3	17.352
17	1	15.456	6	18.492	2	16.616
04	0	13.224	5	18.235	1	15.426
50			4	17.806	0	13.235

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Eight Years.				Older Age Nine Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	18.651	3	17.555	9	18.560	4	18.011
7	18.590	2	16.555	8	18.569	3	17.473
6	18.460	1	15.395	7	18.526	2	16.494
5	18.255	0	13.247	6	18.427	1	15.365
4	17.909			5	18.273	0	13.258

Older Age Ten Years.				Older Age Eleven Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
10	18.407	4	17.917	11	18.223	5	18.192
9	18.468	3	17.391	10	18.313	4	17.823
8	18.486	2	16.434	9	18.377	3	17.310
7	18.461	1	15.334	8	18.404	2	16.373
6	18.394	0	13.269	7	18.397	1	15.304
5	18.291			6	18.361	0	13.195

Older Age Twelve Years.				Older Age Thirteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
12	18.044	5	18.093	13	17.864	6	18.165
11	18.102	4	17.730	12	16.939	5	17.995
10	18.160	3	17.228	11	17.014	4	17.636
9	18.217	2	16.312	10	18.089	3	17.146
8	18.275	1	15.220	9	18.164	2	16.223
7	18.333	0	13.123	8	18.239	1	15.136
6	18.263			7	18.237	0	13.050

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

der Age Fourteen Years.			Older Age Fifteen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.682	6	18.066	15	17.505	7	18.044
17.766	5	17.896	14	17.591	6	17.968
17.850	4	17.542	13	17.677	5	17.797
17.934	3	17.054	12	17.763	4	17.449
18.018	2	16.134	11	17.849	3	16.962
18.102	1	15.051	10	17.935	2	16.046
18.145	0	12.977	9	17.011	1	14.967
18.141			8	18.052	0	12.904

Older Age Sixteen Years.			Older Age Seventeen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.344	7	17.948	17	17.195	8	17.801
17.428	6	17.870	16	17.276	7	17.852
17.512	5	17.703	15	17.357	6	17.773
17.595	4	17.356	14	17.437	5	17.608
17.679	3	16.870	13	17.518	4	17.262
17.763	2	15.957	12	17.599	3	16.778
17.845	1	14.883	11	17.650	2	15.868
16.919	0	12.834	10	17.700	1	14.800
17.958			9	17.751	0	12.765

lder Age Eighteen Years.			Older Age Nineteen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
17.045	8	17.771	19	16.890	9	17.645
17.123	7	17.751	18	16.965	8	17.665
17.201	6	17.676	17	17.040	7	17.650
17.278	5	17.514	16	17.115	6	17.580
17.356	4	17.169	15	17.190	5	17.419
17.434	3	16.686	14	17.265	4	17.076
17.501	2	15.775	13	17.341	3	16.582
17.569	1	14.717	12	17.417	2	15.682
17.636	0	12.695	11	17.493	1	14.685
17.704			10	17.569	0	12.626

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
20	16.729	14	17.173	8	17.559	2	15.568
19	16.802	13	17.251	7	17.548	1	14.552
18	16.875	12	17.329	6	17.483	0	12.556
17	16.949	11	17.407	5	17.325		
16	17.022	10	17.485	4	16.964		
15	17.095	9	17.534	3	16.479		

Older Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
21	16.561	15	17.006	9	17.423	3	16.375
20	16.635	14	17.081	8	17.452	2	15.495
19	16.709	13	17.157	7	17.447	1	14.469
18	16.782	12	17.232	6	17.386	0	12.469
17	16.856	11	17.308	5	17.205		
16	16.930	10	17.369	4	16.852		

Older Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
22	16.382	16	16.837	10	17.214	4	16.741
21	16.459	15	16.909	9	17.258	3	16.272
20	16.535	14	16.982	8	17.302	2	15.402
19	16.612	13	17.054	7	17.346	1	14.363
18	16.688	12	17.126	6	17.260	0	12.382
17	16.765	11	17.170	5	17.086		

Older Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
23	16.195	16	16.733	9	17.180	2	15.283
22	16.275	15	16.802	8	17.240	1	14.256
21	16.355	14	16.871	7	17.214	0	12.295
20	16.435	13	16.940	6	17.134		
19	16.515	12	17.000	5	16.966		
18	16.595	11	17.060	4	16.629		
17	16.664	10	17.120	3	16.168		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Twenty-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
16.000	17	16.551	10	17.021	3	16.038
16.084	16	16.617	9	17.089	2	15.163
16.168	15	16.683	8	17.104	1	14.149
16.251	14	16.749	7	17.063	0	12.208
16.335	13	16.817	6	17.008		
16.419	12	16.885	5	16.847		
16.485	11	16.953	4	16.517		

Older Age Twenty-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.798	18	16.364	11	16.835	4	16.381
15.886	17	16.428	10	16.905	3	15.907
15.973	16	16.492	9	16.953	2	15.044
16.061	15	16.556	8	16.969	1	14.043
16.148	14	16.626	7	16.951	0	12.121
16.236	13	16.696	6	16.882		
16.300	12	16.765	5	16.727		

Older Age Twenty-Six Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.592	19	16.177	12	16.638	5	16.591
15.683	18	16.242	11	16.705	4	16.246
15.775	17	16.306	10	16.771	3	15.777
15.866	16	16.370	9	16.816	2	14.924
15.958	15	16.437	8	16.833	1	13.936
16.049	14	16.504	7	16.820	0	12.022
16.113	13	16.571	6	16.756		

Older Age Twenty-Seven Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.378	20	15.984	13	16.438	6	16.621
15.473	19	16.051	12	16.502	5	16.454
15.567	18	16.117	11	16.539	4	16.110
15.662	17	16.184	10	16.576	3	15.646
15.756	16	16.248	9	16.614	2	14.805
15.851	15	16.311	8	16.651	1	13.823
15.918	14	16.375	7	16.668	0	11.924

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Twenty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
28	15.167	20	15.859	12	16.352	4	15.975
27	15.264	19	15.929	11	16.405	3	15.516
26	15.360	18	15.999	10	16.457	2	14.685
25	15.457	17	16.059	9	16.510	1	13.703
24	15.533	16	16.119	8	16.562	0	11.625
23	15.650	15	16.180	7	16.555		
22	15.720	14	16.240	6	16.486		
21	15.790	13	16.300	5	16.318		

Older Age Twenty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
29	14.974	21	15.675	13	16.167	5	16.181
28	15.070	20	15.748	12	16.227	4	15.839
27	15.167	19	15.821	11	16.287	3	15.390
26	15.263	18	15.878	10	16.347	2	14.555
25	15.360	17	15.935	9	16.407	1	13.596
24	15.456	16	15.993	8	16.430	0	11.727
23	15.529	15	16.050	7	16.422		
22	15.602	14	16.107	6	16.350		

Older Age Thirty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
30	14.808	22	15.501	14	15.991	6	16.215
29	14.901	21	15.578	13	16.053	5	16.045
28	14.993	20	15.655	12	16.114	4	15.706
27	15.086	19	15.710	11	16.176	3	15.263
26	15.178	18	15.765	10	16.237	2	14.445
25	15.271	17	15.820	9	16.273	1	13.482
24	15.348	16	15.875	8	16.298	0	11.628
23	15.425	15	15.930	7	16.290		

Older Age Thirty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
31	14.641	23	15.324	15	15.818	7	16.157
30	15.730	22	15.404	14	15.877	6	16.080
29	15.819	21	15.484	13	15.935	5	15.903
28	15.907	20	15.539	12	15.994	4	15.573
27	15.996	19	15.594	11	16.053	3	15.137
26	15.085	18	15.649	10	16.097	2	14.325
25	15.165	17	15.704	9	16.139	1	13.369
24	15.245	16	15.759	8	16.167	0	11.526

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Thirty-Two Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
14.467	23	15.222	14	15.757	5	15.761
14.552	22	15.305	13	15.812	4	15.441
14.637	21	15.362	12	15.868	3	15.010
14.721	20	15.419	11	15.899	2	14.205
14.806	19	15.476	10	15.930	1	13.243
14.891	18	15.533	9	15.962	0	11.424
14.974	17	15.590	8	15.993		
15.057	16	15.646	7	16.024		
15.139	15	15.701	6	15.930		

Older Age Thirty-Three Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
14.281	24	15.030	15	15.571	6	15.779
14.363	23	15.115	14	15.623	5	15.620
14.445	22	15.175	13	15.675	4	15.308
14.528	21	15.235	12	15.721	3	14.884
14.610	20	15.295	11	15.766	2	14.063
14.692	19	15.355	10	15.812	1	13.118
14.777	18	15.415	9	15.857	0	11.322
14.861	17	15.467	8	15.903		
14.946	16	15.519	7	15.866		

Older Age Thirty-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
14.083	25	14.831	16	15.375	7	15.708
14.165	24	14.915	15	15.424	6	15.629
14.248	23	14.978	14	15.473	5	15.478
14.330	22	15.041	13	15.526	4	15.175
14.413	21	15.103	12	15.579	3	14.728
14.495	20	15.166	11	15.631	2	13.921
14.579	19	15.229	10	15.681	1	12.992
14.663	18	15.278	9	15.737	0	11.220
14.747	17	15.327	8	15.739		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
35	13.876	26	14.627	17	15.176	8	15.574
34	13.962	25	14.707	16	15.222	7	15.549
33	14.048	24	14.773	15	15.269	6	15.478
32	14.135	23	14.839	14	15.323	5	15.336
31	14.221	22	14.904	13	15.377	4	15.008
30	14.307	21	14.970	12	15.431	3	14.571
29	14 387	20	15.036	11	15.485	2	13.780
28	14.467	19	15.083	10	15.539	1	12.867
27	14.547	18	15.129	9	15.567	0	11.118

Older Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
36	13.661	26	14.493	16	15.067	6	15.328
35	13.752	25	14.562	15	15.118	5	15.162
34	13.842	24	14.630	14	15.169	4	14.842
33	13.933	23	14.699	13	15.220	3	14.415
32	14.023	22	14.767	12	15.271	2	13.638
31	14.114	21	14.836	11	15.322	1	12.741
30	14.190	20	14.882	10	15.366	0	10.9[illegible]3
29	14.266	19	14.928	9	15.398		
28	14.341	18	14.975	8	15.410		
27	14.417	17	15.021	7	15.391		

Older Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
37	13.413	27	14.272	17	14.867	7	15.233
36	13.537	26	14.343	16	14.915	6	15.152
35	13.632	25	14.414	15	14.962	5	14.968
34	13.726	24	14.485	14	15.010	4	14.675
33	13.821	23	14.556	13	15.057	3	14.238
32	13.915	22	14.627	12	15.105	2	13.496
31	13.986	21	14.675	11	15.131	1	12.594
30	14.058	20	14.723	10	15.156	0	10.869
29	14.129	19	14.771	9	15.182		
28	14.201	18	14.819	8	15.207		

alue of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Thirty-Eight Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	13.220	28	14.051	18	14.664	8	15.081
37	13.318	27	14.123	17	14.708	7	15.056
36	13.416	26	14.196	16	14.752	6	14.975
35	13.513	25	14.268	15	14.797	5	14.815
34	13.611	24	14.341	14	14.841	4	14.509
33	13.709	23	14.413	13	14.885	3	14.102
32	13.777	22	14.463	12	14.924	2	13.338
31	13.846	21	14.513	11	14.963	1	12.447
30	13.914	20	14.564	10	15.003	0	10.744
29	13.983	19	14.614	9	15.042		

Older Age Thirty-Nine Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9	12.994	29	13.836	19	14.456	9	14.669
8	13.094	28	13.907	18	14.497	8	14.905
7	13.194	27	13.979	17	14.538	7	14.879
6	13.295	26	14.050	16	14.579	6	14.799
5	13.395	25	14.122	15	14.620	5	14.641
4	13.495	24	14.193	14	14.661	4	14.342
3	13.563	23	14.246	13	14.707	3	13.935
2	13.631	22	14.298	12	14.752	2	13.180
1	13.700	21	14.351	11	14.798	1	12.301
0	13.768	20	14.403	10	14.843	0	10.620

Older Age Forty Years.

.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
0	12.774	29	13.703	18	14.326	7	14.703
9	12.875	28	13.770	17	14.365	6	14.622
8	12.977	27	13.838	16	14.403	5	14.467
7	13.078	26	13.905	15	14.442	4	14.171
6	13.160	25	13.972	14	14.469	3	13.768
5	13.281	24	14.027	13	14.536	2	13.021
4	13.352	23	14.083	12	14.582	1	12.154
3	13.423	22	14.133	11	14.629	0	10.495
2	13.494	21	14.194	10	14.676		
1	13.565	20	14.249	9	14.714		
0	13.636	19	14.288	8	14.729		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 3½ per Cent.)

Older Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
41	12.571	30	13.508	19	14.124	8	14.553
40	12.671	29	13.571	18	14.163	7	14.535
39	12.771	28	13.634	17	14.201	6	14.446
38	12.871	27	13.697	16	14.239	5	14.391
37	12.971	26	13.760	15	14.273	4	13.999
36	13.071	25	13.818	14	14.327	3	13.602
35	13.146	24	13.875	13	14.371	2	12.863
34	13.221	23	13.933	12	14.415	1	12.007
33	13.295	22	13.990	11	14.459	0	10.359
32	13.370	21	14.048	10	14.500		
31	13.445	20	14.086	9	14.539		

Older Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
42	12.377	31	13.314	20	13.925	9	14.308
41	12.474	30	13.373	19	13.965	8	14.329
40	12.572	29	13.431	18	14.004	7	14.340
39	12.669	28	13.490	17	14.044	6	14.263
38	12.767	27	13.548	16	14.085	5	14.114
37	12.864	26	13.608	15	14.125	4	13.808
36	12.942	25	13.667	14	14.166	3	13.435
35	13.021	24	13.727	13	14.203	2	12.705
34	13.099	23	13.786	12	14.247	1	11.855
33	13.178	22	13.846	11	14.267	0	10.243
32	13.256	21	13.886	10	14.288		

Older Age Forty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
43	12.187	32	13.117	21	13.725	10	14.135
42	12.281	31	13.172	20	13.767	9	14.168
41	12.375	30	13.228	19	13.808	8	14.201
40	12.468	29	13.283	18	13.850	7	14.138
39	12.562	28	13.338	17	13.887	6	14.080
38	12.656	27	13.399	16	13.924	5	13.938
37	12.737	26	13.460	15	13.962	4	13.656
36	12.818	25	13.520	14	13.999	3	13.368
35	12.900	24	13.581	13	14.036	2	12.535
34	12.981	23	13.642	12	14.069	1	11.704
33	13.062	22	13.684	11	14.102	0	10.117

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	11.990	32	12.968	20	13.605	8	13.999
43	12.081	31	13.023	19	13.649	7	13.966
42	12.171	30	13.077	18	13.683	6	13.897
41	12.262	29	13.132	17	13.717	5	13.761
40	12.352	28	13.192	16	13.751	4	13.485
39	12.443	27	13.251	15	13.785	3	13.077
38	12.526	26	13.311	14	13.819	2	12.365
37	12.609	25	13.370	13	13.858	1	11.552
36	12.693	24	13.430	12	13.897	0	9.991
35	12.776	23	13.474	11	13.936		
34	12.859	22	13.518	10	13.975		
33	12.914	21	13.561	9	14.014		

Older Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	11.785	33	12.761	21	13.394	9	13.799
44	11.874	32	12.818	20	13.440	8	13.797
43	11.963	31	12.875	19	13.472	7	13.775
42	12.051	30	12.932	18	13.503	6	13.714
41	12.140	29	12.988	17	13.535	5	13.585
40	12.229	28	13.043	16	13.566	4	13.275
39	12.313	27	13.099	15	13.598	3	12.887
38	12.396	26	13.154	14	13.638	2	12.194
37	12.480	25	13.210	13	13.678	1	11.401
36	12.563	24	13.256	12	13.718	0	9.865
35	12.647	23	13.302	11	13.758		
34	12.704	22	13.348	10	13.798		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value
46	11.568	34	12.544	22	13.172	10	13.567
45	11.658	33	12.605	21	13.220	9	13.584
44	11.748	32	12.665	20	13.251	8	13.595
43	11.837	31	12.725	19	13.282	7	13.583
42	11.927	30	12.776	18	13.313	6	13.531
41	12.017	29	12.827	17	13.344	5	13.355
40	12.098	28	12.878	16	13.375	4	13.065
39	12.180	27	12.929	15	13.412	3	12.696
38	12.261	26	12.980	14	13.449	2	12.024
37	12.313	25	13.028	13	13.487	1	11.249
36	12.424	24	13.076	12	13.524	0	9.702
35	12.484	23	13.124	11	13.561		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Forty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
47	11.334	35	12.318	23	12.936	11	13.331
46	11.427	34	12.380	22	12.986	10	13.346
45	11.521	33	12.443	21	13.018	9	13.362
44	11.614	32	12.506	20	13.050	8	13.377
43	11.708	31	12.552	19	13.082	7	13.392
42	11.801	30	12.599	18	13.114	6	13.281
41	11.879	29	12.645	17	13.146	5	13.125
40	11.957	28	12.692	16	13.180	4	12.856
39	12.036	27	12.738	15	13.214	3	12.506
38	12.114	26	12.788	14	13.248	2	11.854
37	12.192	25	12.837	13	13.282	1	11.044
36	12.255	24	12.887	12	13.316	0	9.539

Older Age Forty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
48	11.081	35	12.140	22	12.770	9	13.164
47	11.180	34	12.205	21	12.803	8	13.191
46	11.279	33	12.270	20	12.837	7	13.125
45	11.378	32	12.313	19	12.870	6	13.032
44	11.477	31	12.356	18	12.904	5	12.896
43	11.576	30	12.398	17	12.934	4	12.645
42	11.650	29	12.441	16	12.965	3	12.315
41	11.724	28	12.484	15	12.995	2	11.618
40	11.798	27	12.534	14	13.026	1	10.838
39	11.872	26	12.585	13	13.056	0	9.376
38	11.946	25	12.635	12	13.084		
37	12.011	24	12.686	11	13.110		
36	12.076	23	12.736	10	13.137		

Older Age Forty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
49	10.796	36	11.878	23	12.497	10	12.905
48	10.903	35	11.944	22	12.533	9	12.938
47	11.010	34	12.010	21	12.568	8	12.910
46	11.116	33	12.052	20	12.604	7	12.858
45	11.223	32	12.093	19	12.639	6	12.782
44	11.330	31	12.135	18	12.666	5	12.666
43	11.400	30	12.176	17	12.693	4	12.436
42	11.470	29	12.218	16	12.721	3	12.051
41	11.541	28	12.267	15	12.748	2	11.382
40	11.611	27	12.316	14	12.775	1	10.633
39	11.681	26	12.364	13	12.808	0	9.213
38	11.747	25	12.413	12	12.840		
37	11.813	24	12.462	11	12.873		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	10.486	37	11.601	24	12.208	11	12.612
49	10.602	36	11.666	23	12.245	10	12.645
48	10.718	35	11.732	22	12.283	9	12.646
47	10.835	34	11.775	21	12.320	8	12.628
46	10.951	33	11.818	20	12.357	7	12.591
45	11.067	32	11.862	19	12.382	6	12.533
44	11.134	31	11.905	18	12.407	5	12.436
43	11.202	30	11.948	17	12.431	4	12.154
42	11.269	29	11.993	16	12.456	3	11.788
41	11.337	28	12.037	15	12.481	2	11.146
40	11.404	27	12.082	14	12.514	1	10.427
39	11.470	26	12.126	13	12.547	0	9.050
38	11.535	25	12.171	12	12.579		

Older Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	10.150	38	11.310	25	11.901	12	12.296
50	10.277	37	11.372	24	11.939	11	12.326
49	10.404	36	11.435	23	11.978	10	12.345
48	10.531	35	11.481	22	12.016	9	12.354
47	10.658	34	11.526	21	12.055	8	12.347
46	10.785	33	11.572	20	12.079	7	12.324
45	10.852	32	11.617	19	12.103	6	12.283
44	10.920	31	11.663	18	12.127	5	12.139
43	10.987	30	11.703	17	12.151	4	11.872
42	11.055	29	11.743	16	12.175	3	11.524
41	11.122	28	11.782	15	12.205	2	10.910
40	11.185	27	11.822	14	12.235	1	10.222
39	11.247	26	11.862	13	12.266	0	8.840

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	9.812	39	11.017	26	11.588	13	11.978
51	9.949	38	11.076	25	11.628	12	12.005
50	10.085	37	11.135	24	11.667	11	12.015
49	10.222	36	11.182	23	11.707	10	12.026
48	10.358	35	11.230	22	11.747	9	12.036
47	10.495	34	11.277	21	11.772	8	12.047
46	10.564	33	11.325	20	11.796	7	12.057
45	10.633	32	11.372	19	11.821	6	11.976
44	10.703	31	11.407	18	11.845	5	11.842
43	10.772	30	11.442	17	11.870	4	11.589
42	10.841	29	11.478	16	11.897	3	11.261
41	10.900	28	11.513	15	11.924	2	10.674
40	10.959	27	11.548	14	11.951	1	9.970
						0	8.630

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
53	9.471	42	10.614	31	11.137	20	11.510	9	11.763
52	9.615	41	10.668	30	11.169	19	11.536	8	11.784
51	9.760	40	10.723	29	11.200	18	11.562	7	11.742
50	9.904	39	10.777	28	11.232	17	11.586	6	11.669
49	10.049	38	10.831	27	11.272	16	11.609	5	11.544
48	10.193	37	10.880	26	11.312	15	11.633	4	11.307
47	10.266	36	10.928	25	11.352	14	11.656	3	10.997
46	10.340	35	10.977	24	11.392	13	11.680	2	10.396
45	10.413	34	11.025	23	11.432	12	11.701	1	9.718
44	10.487	33	11.074	22	11.458	11	11.722	0	8.419
43	10.560	32	11.106	21	11.484	10	11.742		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
54	9.127	43	10.323	32	10.828	21	11.194	10	11.453
53	9.277	42	10.373	31	10.859	20	11.221	9	11.479
52	9.426	41	10.423	30	10.889	19	11.248	8	11.463
51	9.576	40	10.473	29	10.919	18	11.269	7	11.427
50	9.725	39	10.523	28	10.958	17	11.289	6	11.363
49	9.875	38	10.572	27	10.996	16	11.310	5	11.247
48	9.955	37	10.621	26	11.035	15	11.330	4	11.025
47	10.034	36	10.670	25	11.073	14	11.351	3	10.697
46	10.114	35	10.719	24	11.112	13	11.377	2	10.119
45	10.193	34	10.768	23	11.139	12	11.402	1	9.467
44	10.273	33	10.798	22	11.166	11	11.428	0	8.209

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
55	8.774	43	10.071	31	10.578	19	10.943	7	11.112
54	8.927	42	10.118	30	10.609	18	10.962	6	11.056
53	9.080	41	10.164	29	10.644	17	10.980	5	10.950
52	9.231	40	10.211	28	10.678	16	10.999	4	10.714
51	9.387	39	10.259	27	10.713	15	11.017	3	10.397
50	9.540	38	10.308	26	10.747	14	11.043	2	9.841
49	9.628	37	10.356	25	10.782	13	11.069	1	9.215
48	9.715	36	10.405	24	10.811	12	11.095	0	7.999
47	9.803	35	10.453	23	10.839	11	11.121		
46	9.890	34	10.484	22	10.868	10	11.147		
45	9.978	33	10.515	21	10.896	9	11.157		
44	10.025	32	10.547	20	10.925	8	11.142		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
56	8.416	44	9.766	32	10.263	20	10.613	8	10.821
55	8.571	43	9.811	31	10.296	19	10.631	7	10.797
54	8.726	42	9.857	30	10.326	18	10.648	6	10.749
53	8.881	41	9.903	29	10.356	17	10.666	5	10.637
52	9.036	40	9.949	28	10.387	16	10.683	4	10.403
51	9.191	39	9.994	27	10.417	15	10.707	3	10.098
50	9.288	38	10.040	26	10.447	14	10.730	2	9.564
49	9.384	37	10.085	25	10.477	13	10.754	1	8.963
48	9.481	36	10.131	24	10.507	12	10.777	0	7.777
47	9.577	35	10.164	23	10.536	11	10.801		
46	9.674	34	10.197	22	10.566	10	10.830		
45	9.720	33	10.230	21	10.596	9	10.835		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
57	8.051	45	9.453	33	9.940	21	10.276	9	10.469
56	8.208	44	9.501	32	9.974	20	10.294	8	10.476
55	8.366	43	9.548	31	10.000	19	10.311	7	10.482
54	8.523	42	9.595	30	10.026	18	10.329	6	10.416
53	8.681	41	9.636	29	10.052	17	10.347	5	10.324
52	8.838	40	9.678	28	10.078	16	10.368	4	10.093
51	8.942	39	9.719	27	10.104	15	10.388	3	9.798
50	9.046	38	9.761	26	10.135	14	10.409	2	9.286
49	9.151	37	9.802	25	10.166	13	10.429	1	8.714
48	9.255	36	9.836	24	10.196	12	10.450	0	7.555
47	9.359	35	9.871	23	10.227	11	10.456		
46	9.406	34	9.905	22	10.258	10	10.463		

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.692	46	9.141	34	9.617	22	9.938	10	10.148
57	7.851	45	9.190	33	9.652	21	9.957	9	10.164
56	8.010	44	9.240	32	9.674	20	9.976	8	10.179
55	8.168	43	9.290	31	9.697	19	9.995	7	10.192
54	8.327	42	9.327	30	9.719	18	10.014	6	10.143
53	8.486	41	9.364	29	9.742	17	10.032	5	10.012
52	8.597	40	9.401	28	9.764	16	10.049	4	9.782
51	8.708	39	9.438	27	9.795	15	10.067	3	9.498
50	8.819	38	9.475	26	9.826	14	10.084	2	9.031
49	8.930	37	9.510	25	9.857	13	10.102	1	8.465
48	9.041	36	9.546	24	9.888	12	10.117	0	7.332
47	9.091	35	9.581	23	9.919	11	10.133		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.

Older Age Fifty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
59	7.361	47	8.835	35	9.306	23	9.616	11	9.829
58	7.439	46	8.890	34	9.341	22	9.636	10	9.849
57	7.616	45	8.945	33	9.362	21	9.656	9	9.868
56	7.794	44	9.000	32	9.384	20	9.676	8	9.903
55	7.971	43	9.333	31	9.405	19	9.696	7	9.903
54	8.149	42	9.066	30	9.427	18	9.711	6	9.839
53	8.264	41	9.098	29	9.448	17	9.726	5	9.699
52	8.379	40	9.131	28	9.478	16	9.741	4	9.471
51	8.495	39	9.164	27	9.507	15	9.756	3	9.241
50	8.610	38	9.199	26	9.537	14	9.771	2	8.776
49	8.725	37	9.235	25	9.566	13	9.790	1	8.216
48	8.780	36	9.270	24	9.596	12	9.810	0	7.110

Older Age Sixty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
60	7.069	47	8.607	34	9.073	21	9.380	8	9.627
59	7.221	46	8.668	33	9.096	20	9.401	7	9.613
58	7.373	45	8.730	32	9.118	19	9.414	6	9.536
57	7.525	44	8.760	31	9.141	18	9.427	5	9.386
56	7.677	43	8.789	30	9.163	17	9.439	4	9.214
55	7.829	42	8.819	29	9.189	16	9.452	3	8.984
54	7.948	41	8.843	28	9.215	15	9.465	2	8.521
53	8.066	40	8.878	27	9.242	14	9.485	1	7.967
52	8.185	39	8.913	26	9.268	13	9.505	0	6.888
51	8.303	38	8.947	25	9.294	12	9.524		
50	8.422	37	8.982	24	9.315	11	9.544		
49	8.484	36	9.016	23	9.337	10	9.564		
48	8.545	35	9.051	22	9.358	9	9.601		

Older Age Sixty-One Years.

Age	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
61	6.832	48	8.350	35	8.818	22	9.116	9	9.331
60	6.973	47	8.419	34	8.841	21	9.138	8	9.352
59	7.114	46	8.489	33	8.865	20	9.150	7	9.324
58	7.254	45	8.518	32	8.888	19	9.162	6	9.231
57	7.395	44	8.546	31	8.912	18	9.175	5	9.126
56	7.536	43	8.575	30	8.935	17	9.187	4	8.957
55	7.657	42	8.603	29	8.958	16	9.199	3	8.726
54	7.778	41	8.632	28	8.980	15	9.217	2	8.266
53	7.899	40	8.664	27	9.003	14	9.235	1	7.718
52	8.020	39	8.697	26	9.026	13	9.252	0	6.704
51	8.141	38	8.729	25	9.048	12	9.270		
50	8.211	37	8.762	24	9.071	11	9.288		
49	8.280	36	8.794	23	9.093	10	9.300		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
62	6.606	42	8.395	22	8.878	2	8.011
61	6.734	41	8.424	21	8.891	1	7.497
60	6.862	40	8.453	20	8.903	0	6.520
59	6.991	39	8.481	19	8.916		
58	7.119	38	8.510	18	8.928		
57	7.247	37	8.539	17	8.941		
56	7.371	36	8.564	16	8.956		
55	7.494	35	8.589	15	8.972		
54	7.618	34	8.615	14	8.987		
53	7.741	33	8.640	13	9.003		
52	7.865	32	8.665	12	9.018		
51	7.942	31	8.684	11	9.021		
50	8.019	30	8.703	10	9.024		
49	8.095	29	8.722	9	9.028		
48	8.172	28	8.741	8	9.031		
47	8.249	27	8.760	7	9.034		
46	8.278	26	8.784	6	8.963		
45	8.307	25	8.807	5	8.866		
44	8.337	24	8.831	4	8.700		
43	8.366	23	8.854	3	8.469		

Older Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
63	6.378	43	8.159	23	8.613	3	8.212
62	6.494	42	8.184	22	8.627	2	7.764
61	6.610	41	8.209	21	8.640	1	7.277
60	6.726	40	8.233	20	8.654	0	6.337
59	6.842	39	8.258	19	8.667		
58	6.958	38	8.283	18	8.681		
57	7.084	37	8.309	17	8.694		
56	7.210	36	8.335	16	8.707		
55	7.336	35	8.360	15	8.719		
54	7.462	34	8.386	14	8.732		
53	7.588	33	8.412	13	8.745		
52	7.671	32	8.428	12	8.756		
51	7.753	31	8.444	11	8.767		
50	7.836	30	8.461	10	8.778		
49	7.918	29	8.477	9	8.789		
48	8.001	28	8.493	8	8.800		
47	8.033	27	8.517	7	8.753		
46	8.064	26	8.541	6	8.693		
45	8.096	25	8.565	5	8.605		
44	8.127	24	8.589	4	8.443		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Liv
(Carlisle 3½ per Cent.)

Older Age Sixty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
64	6.137	44	7.910	24	8.335	4	
63	6.244	43	7.931	23	8.349	3	
62	6.352	42	7.952	22	8.364	2	
61	6.459	41	7.972	21	8.378	1	
60	6.567	40	7.993	20	8.393	0	
59	6.674	39	8.014	19	8.407		
58	6.799	38	8.040	18	8.418		
57	6.924	37	8.066	17	8.428		
56	7.049	36	8.093	16	8.439		
55	7.174	35	8.119	15	8.449		
54	7.299	34	8.145	14	8.460		
53	7.386	33	8.160	13	8.475		
52	7.472	32	8.175	12	8.489		
51	7.559	31	8.190	11	8.504		
50	7.645	30	8.205	10	8.518		
49	7.732	29	8.220	9	8.533		
48	7.768	28	8.243	8	8.507		
47	7.803	27	8.266	7	8.472		
46	7.839	26	8.289	6	8.424		
45	7.874	25	8.312	5	8.345		

Older Age Sixty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	
65	5.889	45	7.654	25	8.048	5	8
64	5.992	44	7.672	24	8.064	4	7
63	6.095	43	7.689	23	8.079	3	7
62	6.197	42	7.707	22	8.095	2	7
61	6.300	41	7.724	21	8.110	1	6
60	6.403	40	7.742	20	8.126	0	5
59	6.523	39	7.767	19	8.135		
58	6.643	38	7.793	18	8.144		
57	6.763	37	7.818	17	8.152		
56	6.883	36	7.844	16	8.161		
55	7.003	35	7.869	15	8.170		
54	7.092	34	7.885	14	8.185		
53	7.182	33	7.901	13	8.200		
52	7.271	32	7.916	12	8.215		
51	7.361	31	7.932	11	8.230		
50	7.450	30	7.948	10	8.245		
49	7.491	29	7.968	9	8.229		
48	7.532	28	7.988	8	8.214		
47	7.572	27	8.008	7	8.190		
46	7.613	26	8.028	6	8.154		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
66	5.629	46	7.386	26	7.750	6	7.884
65	5.733	45	7.402	25	7.767	5	7.776
64	5.837	44	7.418	24	7.783	4	7.603
63	5.942	43	7.434	23	7.800	3	7.395
62	6.046	42	7.450	22	7.816	2	7.025
61	6.150	41	7.466	21	7.833	1	6.615
60	6.259	40	7.489	20	7.841	0	5.751
59	6.369	39	7.512	19	7.849		
58	6.478	38	7.536	18	7.857		
57	6.588	37	7.559	17	7.865		
56	6.697	36	7.582	16	7.873		
55	6.788	35	7.599	15	7.886		
54	6.878	34	7.616	14	7.899		
53	6.969	33	7.632	13	7.913		
52	7.059	32	7.649	12	7.926		
51	7.150	31	7.666	11	7.939		
50	7.197	30	7.683	10	7.931		
49	7.244	29	7.700	9	7.926		
48	7.292	28	7.716	8	7.921		
47	7.339	27	7.733	7	7.909		

Older Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
67	5.354	47	7.103	27	7.439	7	7.628
66	5.462	46	7.119	26	7.456	6	7.561
65	5.570	45	7.135	25	7.474	5	7.467
64	5.679	44	7.152	24	7.491	4	7.312
63	5.787	43	7.168	23	7.509	3	7.122
62	5.895	42	7.184	22	7.526	2	6.778
61	5.992	41	7.204	21	7.534	1	6.350
60	6.089	40	7.224	20	7.542	0	5.533
59	6.185	39	7.243	19	7.551		
58	6.282	38	7.263	18	7.559		
57	6.379	37	7.283	17	7.567		
56	6.471	36	7.301	16	7.578		
55	6.564	35	7.319	15	7.589		
54	6.656	34	7.336	14	7.601		
53	6.749	33	7.354	3	7.612		
52	6.841	32	7.372	12	7.623		
51	6.893	31	7.385	11	7.624		
50	6.946	30	7.399	10	7.625		
49	6.998	29	7.412	9	7.626		
48	7.051	28	7.426	8	7.627		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 3½ per Cent.)

Older Age Sixty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
68	5.069	48	6.807	28	7.121	8	7.335
67	5.182	47	6.824	27	7.139	7	7.298
66	5.294	46	6.842	26	7.156	6	7.237
65	5.407	45	6.859	25	7.174	5	7.158
64	5.519	44	6.877	24	7.191	4	7.020
63	5.632	43	6.894	23	7.209	3	6.850
62	5.717	42	6.910	22	7.218	2	6.488
61	5.802	41	6.926	21	7.227	1	6.085
60	5.887	40	6.942	20	7.235	0	5.314
59	5.972	39	6.958	19	7.244		
58	6.057	38	6.974	18	7.253		
57	6.150	37	6.994	17	7.262		
56	6.244	36	7.011	16	7.271		
55	6.337	35	7.030	15	7.280		
54	6.431	34	7.048	14	7.289		
53	6.524	33	7.067	13	7.298		
52	6.581	32	7.078	12	7.305		
51	6.637	31	7.089	11	7.313		
50	6.694	30	7.099	10	7.320		
49	6.750	29	7.110	9	7.328		

Older Age Sixty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
69	4.769	49	6.493	29	6.797	9	7.015
68	4.887	48	6.513	28	6.814	8	7.008
67	5.004	47	6.533	27	6.830	7	6.968
66	5.122	46	6.554	26	6.847	6	6.914
65	5.239	45	6.574	25	6.863	5	6.849
64	5.357	44	6.594	24	6.880	4	6.729
63	5.433	43	6.606	23	6.890	3	6.546
62	5.509	42	6.619	22	6.899	2	6.198
61	5.585	41	6.631	21	6.909	1	5.821
60	5.661	40	6.641	20	6.918	0	5.096
59	5.737	39	6.656	19	6.928		
58	5.829	38	6.675	18	6.935		
57	5.921	37	6.694	17	6.942		
56	6.013	36	6.711	16	6.949		
55	6.105	35	6.730	15	6.956		
54	6.197	34	6.748	14	6.963		
53	6.256	33	6.758	13	6.973		
52	6.315	32	6.768	12	6.984		
51	6.375	31	6.777	11	6.994		
50	6.434	30	6.787	10	7.005		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.

Older Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
70	4.459	50	6.166	30	6.472	10	6.674
69	4.582	49	6.190	29	6.486	9	6.700
68	4.704	48	6.214	28	6.500	8	6.681
67	4.827	47	6.237	27	6.514	7	6.638
66	4.949	46	6.261	26	6.528	6	6.590
65	5.072	45	6.285	25	6.542	5	6.540
64	5.143	44	6.294	24	6.552	4	6.427
63	5.214	43	6.303	23	6.563	3	6.242
62	5.284	42	6.313	22	6.578	2	5.909
61	5.355	41	6.322	21	6.584	1	5.556
60	5.426	40	6.331	20	6.594	0	4.878
59	5.513	39	6.349	19	6.599		
58	5.600	38	6.367	18	6.605		
57	5.688	37	6.384	17	6.610		
56	5.775	36	6.402	16	6.616		
55	5.862	35	6.420	15	6.621		
54	5.923	34	6.430	14	6.632		
53	5.984	33	6.441	13	6.642		
52	6.044	32	6.451	12	6.653		
51	6.105	31	6.462	11	6.663		

Older Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
71	4.132	51	5.820	31	6.135	11	6.317
70	4.260	50	5.848	30	6.146	10	6.536
69	4.388	49	5.877	29	6.158	9	6.369
68	4.516	48	5.905	28	6.169	8	6.344
67	4.644	47	5.934	27	6.181	7	6.304
66	4.772	46	5.962	26	6.192	6	6.267
65	4.843	45	5.970	25	6.203	5	6.404
64	4.914	44	5.978	24	6.214	4	6.110
63	4.985	43	5.985	23	6.225	3	5.929
62	5.056	42	5,993	22	6.236	2	5.615
61	5.127	41	6.001	21	6.247	1	5.292
60	5.204	40	6.017	20	6.252	0	4.784
59	5.282	39	6.032	19	6.257		
58	5.359	38	6.048	18	6.261		
57	5.437	37	6.063	17	6.266		
56	5.514	36	6.079	16	6.271		
55	5.575	35	6.090	15	6.280		
54	5.636	34	6.101	14	6.289		
53	5.698	33	6.113	13	6.299		
52	5.759	32	6.124	12	6.308		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Seventy-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
72	3.828	52	5.494	32	5.816	12	5.980
71	3.958	51	5.526	31	5.825	11	5.980
70	4.089	50	5.558	30	5.834	10	5.979
69	4.219	49	5.591	29	5.842	9	5.979
68	4.350	48	5.623	28	5.851	8	5.978
67	4.480	47	5.655	27	5.860	7	5.973
66	4.554	46	5.662	26	5.872	6	6.005
65	4.627	45	5.670	25	5.883	5	6.082
64	4.701	44	5.677	24	5.895	4	5.814
63	4.774	43	5.685	23	5.906	3	5.630
62	4.848	42	5.692	22	5.918	2	5.329
61	4.915	41	5.705	21	5.923	1	5.076
60	4.981	40	5.718	20	5.928	0	4.552
59	5.048	39	5.731	19	5.932		
58	5.114	38	5.744	18	5.937		
57	5.181	37	5.757	17	5.942		
56	5.244	36	5.769	16	5.950		
55	5.306	35	5.781	15	5.957		
54	5.369	34	5.792	14	5.965		
53	5.431	33	5.804	13	5.972		

Older Age Seventy-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
73	3.562	53	5.196	33	5.526	13	5.676
72	3.691	52	5.232	32	5.533	12	5.681
71	3.821	51	5.267	31	5.540	11	5.685
70	3.950	50	5.303	30	5.546	10	5.690
69	4.080	49	5.338	29	5.553	9	5.694
68	4.209	48	5.374	28	5.560	8	5.699
67	4.286	47	5.382	27	5.572	7	5.741
66	4.363	46	5.390	26	5.584	6	5.743
65	4.439	45	5.398	25	5.595	5	5.759
64	4.516	44	5.406	24	5.607	4	5.517
63	4.593	43	5.414	23	5.619	3	5.330
62	4.650	42	5.424	22	5.624	2	5.120
61	4.707	41	5.434	21	5.630	1	4.860
60	4.763	40	5.444	20	5.635	0	4.319
59	4.820	39	5.454	19	5.641		
58	4.877	38	5.464	18	5.646		
57	4.941	37	5.476	17	5.652		
56	5.005	36	5.489	16	5.658		
55	5.068	35	5.501	15	5.664		
54	5.132	34	5.514	14	5.670		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Seventy-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
74	3.338	54	4.929	34	5.267	14	5.405
73	3.461	53	4.967	33	5.273	13	5.412
72	3.585	52	5.005	32	5.279	12	5.419
71	3.708	51	5.042	31	5.285	11	5.426
70	3.832	50	5.080	30	5.291	10	5.433
69	3.955	49	5.118	29	5.297	9	5.440
68	4.036	48	5.128	28	5.308	8	5.480
67	4.118	47	5.138	27	5.320	7	5.504
66	4.199	46	5.148	26	5.331	6	5.482
65	4.281	45	5.158	25	5.343	5	5.437
64	4.362	44	5.163	24	5.354	4	5.220
63	4.412	43	5.175	23	5.360	3	5.127
62	4.462	42	5.182	22	5.366	2	4.912
61	4.512	41	5.190	21	5.371	1	4.644
60	4.562	40	5.197	20	5.377	0	4.087
59	4.612	39	5.204	19	5.383		
58	4.675	38	5.217	18	5.387		
57	4.739	37	5.229	17	5.392		
56	4.802	36	5.242	16	5.396		
55	4.866	35	5.254	15	5.401		

Older Age Seventy-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
75	3.174	55	4.704	35	5.053	15	5.183
74	3.285	54	4.744	34	5.059	14	5.190
73	3.397	53	4.784	33	5.066	13	5.198
72	3.508	52	4.823	32	5.072	12	5.205
71	3.620	51	4.863	31	5.079	11	5.213
70	3.731	50	4.903	30	5.085	10	5.220
69	3.818	49	4.916	29	5.095	9	5.229
68	3.906	48	4.929	28	5.105	8	5.262
67	3.993	47	4.941	27	5.114	7	5.266
66	4.081	46	4.954	26	5.124	6	5.220
65	4.168	45	4.967	25	5.134	5	5.114
64	4.214	44	4.972	24	5.141	4	5.018
63	4.260	43	4.977	23	5.147	3	4.924
62	4.307	42	4.981	22	5.154	2	4.703
61	4.353	41	4.986	21	5.160	1	4.428
60	4.399	40	4.991	20	5.167	0	3.854
59	4.460	39	5.003	19	5.170		
58	4.521	38	5.016	18	5.173		
57	4.582	37	5.028	17	5.177		
56	4.643	36	5.041	16	5.180		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
76	3.016	56	4.481	36	4.842	16	4.968
75	3.113	55	4.522	35	4.849	15	4.974
74	3.210	54	4.563	34	4.857	14	4.981
73	3.308	53	4.605	33	4.864	13	4.987
72	3.405	52	4.646	32	4.872	12	4.994
71	3.502	51	4.687	31	4.879	11	5.000
70	3.596	50	4.703	30	4.887	10	5.011
69	3.691	49	4.720	29	4.895	9	5.018
68	3.785	48	4.736	28	4.902	8	5.043
67	3.880	47	4.753	27	4.910	7	5.029
66	3.974	46	4.769	26	4.918	6	4.958
65	4.021	45	4.772	25	4.925	5	4.903
64	4.068	44	4.776	24	4.933	4	4.816
63	4.114	43	4.779	23	4.940	3	4.721
62	4.161	42	4.783	22	4.948	2	4.495
61	4.208	41	4.786	21	4.955	1	4.212
60	4.263	40	4.797	20	4.958	0	3.707
59	4.317	39	4.808	19	4.960		
58	4.372	38	4.820	18	4.963		
57	4.426	37	4.831	17	4.965		

Older Age Seventy-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
77	2.878	57	4.270	37	4.647	17	4.771
76	2.961	56	4.313	36	4.655	16	4.776
75	3.044	55	4.357	35	4.663	15	4.781
74	3.128	54	4.400	34	4.671	14	4.787
73	3.211	53	4.444	33	4.679	13	4.792
72	3.294	52	4.487	32	4.687	12	4.797
71	3.393	51	4.507	31	4.693	11	4.796
70	3.492	50	4.526	30	4.699	10	4.795
69	3.590	49	4.546	29	4.705	9	4.794
68	3.689	48	4.565	28	4.711	8	4.793
67	3.788	47	4.585	27	4.717	7	4.792
66	3.837	46	4.588	26	4.725	6	4.747
65	3.887	45	4.591	25	4.733	5	4.703
64	3.936	44	4.594	24	4.741	4	4.613
63	3.986	43	4.597	23	4.749	3	4.518
62	4.035	42	4.600	22	4.757	2	4.286
61	4.082	41	4.609	21	4.760	1	4.039
60	4.129	40	4.619	20	4.763	0	3.560
59	4.176	39	4.628	19	4.765		
58	4.223	38	4.638	18	4.768		

e of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Seventy-Eight Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
2.740	58	4.057	38	4.447	18	4.570
2.812	57	4.102	37	4.456	17	4.574
2.884	56	4.147	36	4.465	16	4.578
2.955	55	4.193	35	4.473	15	4.583
3.027	54	4.238	34	4.482	14	4.587
3.099	53	4.283	33	4.491	13	4.591
3.199	52	4.306	32	4.495	12	4.594
3.298	51	4.328	31	4.499	11	4.597
3.398	50	4.351	30	4.504	10	4.600
3.497	49	4.373	29	4.508	9	4.603
3.597	48	4.396	28	4.512	8	4.606
3.650	47	4.399	27	4.521	7	4.578
3.703	46	4.402	26	4.529	6	4.536
3.755	45	4.405	25	4.538	5	4.498
3.808	44	4.408	24	4.546	4	4.411
3.861	43	4.411	23	4.555	3	4.315
3.900	42	4.418	22	4.558	2	4.098
3.939	41	4.425	21	4.561	1	3.865
3.979	40	4.433	20	4.564	0	3.413
4.018	39	4.440	19	4.567		

Older Age Seventy-Nine Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
2.571	59	3.829	39	4.223	19	4.345
2.638	58	3.874	38	4.232	18	4.348
2.704	57	3.920	37	4.241	17	4.351
2.771	56	3.965	36	4.251	16	4.354
2.837	55	4.011	35	4.260	15	4.357
2.904	54	4.056	34	4.269	14	4.360
2.999	53	4.080	33	4.272	13	4.365
3.095	52	4.105	32	4.276	12	4.370
3.190	51	4.129	31	4.279	11	4.374
3.286	50	4.154	30	4.283	10	4.379
3.381	49	4.178	29	4.286	9	4.384
3.437	48	4.182	28	4.294	8	4.390
3.494	47	4.186	27	4.302	7	4.364
3.550	46	4.191	26	4.311	6	4.326
3.607	45	4.195	25	4.319	5	4.292
3.663	44	4.199	24	4.327	4	4.209
3.696	43	4.204	23	4.331	3	4.114
3.729	42	4.209	22	4.334	2	3.910
3.763	41	4.213	21	4.338	1	3.692
3.796	40	4.218	20	4.341	0	3.266

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Eighty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
80	2.424	59	3.669	38	4.036	17	4.143
79	2.489	58	3.713	37	4.045	16	4.145
78	2.553	57	3.756	36	4.054	15	4.147
77	2.618	56	3.800	35	4.063	14	4.152
76	2.682	55	3.843	34	4.067	13	4.157
75	2.747	54	3.869	33	4.071	12	4.163
74	2.832	53	3.895	32	4.074	11	4.168
73	2.918	52	3.921	31	4.078	10	4.173
72	3.003	51	3.947	30	4.082	9	4.172
71	3.089	50	3.973	29	4.089	8	4.173
70	3.174	49	3.979	28	4.096	7	4.151
69	3.235	48	3.985	27	4.103	6	4.115
68	3.296	47	3.992	26	4.110	5	4.087
67	3.356	46	3.998	25	4.117	4	4.066
66	3.417	45	4.004	24	4.121	3	3.913
65	3.478	44	4.007	23	4.125	2	3.723
64	3.508	43	4.010	22	4.129	1	3.518
63	3.537	42	4.012	21	4.133	0	3.119
62	3.567	41	4.015	20	4.137		
61	3.596	40	4.018	19	4.139		
60	3.626	39	4.027	18	4.141		

Older Age Eighty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
81	2.252	61	3.421	41	3.797	21	3.910
80	2.317	60	3.459	40	3.805	20	3.911
79	2.383	59	3.497	39	3.813	19	3.913
78	2.448	58	3.536	38	3.821	18	3.914
77	2.514	57	3.574	37	3.829	17	3.916
76	2.579	56	3.612	36	3.837	16	3.917
75	2.652	55	3.639	35	3.842	15	3.922
74	2.725	54	3.665	34	3.846	14	3.926
73	2.798	53	3.692	33	3.851	13	3.931
72	2.871	52	3.718	32	3.855	12	3.935
71	2.944	51	3.745	31	3.860	11	3.940
70	3.010	50	3.754	30	3.865	10	3.961
69	3.076	49	3.763	29	3.871	9	3.960
68	3.142	48	3.771	28	3.876	8	3.957
67	3.208	47	3.780	27	3.882	7	3.937
66	3.274	46	3.789	26	3.887	6	3.904
65	3.303	45	3.791	25	3.892	5	3.879
64	3.333	44	3.792	24	3.896	4	3.803
63	3.362	43	3.794	23	3.901	3	3.713
62	3.392	42	3.795	22	3.905	2	3.535
						1	3.345

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 3½ per Cent.)

Older Age Eighty-Two Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
2	2.107	62	3.238	42	3.601	22	3.705
	2.173	61	3.270	41	3.608	21	3.706
	2.238	60	3.302	40	3.614	20	3.708
	2.304	59	3.335	39	3.621	19	3.709
	2.369	58	3.367	38	3.627	18	3.711
7	2.435	57	3.399	37	3.634	17	3.712
6	2.496	56	3.427	36	3.639	16	3.716
5	2.556	55	3.455	35	3.644	15	3.720
4	2.617	54	3.484	34	3.649	14	3.723
3	2.677	53	3.512	33	3.654	13	3.727
2	2.738	52	3.540	32	3.659	12	3.731
1	2.808	51	3.551	31	3.663	11	3.729
0	2.877	50	3.562	30	3.667	10	3.728
9	2.947	49	3.574	29	3.671	9	3.726
8	3.016	48	3.585	28	3.675	8	3.725
7	3.086	47	3.596	27	3.679	7	3.723
6	3.116	46	3.597	26	3.684	6	3.702
5	3.147	45	3.598	25	3.689	5	3.671
4	3.177	44	3.599	24	3.695	4	3.601
3	3.208	43	3.600	23	3.700	3	3.512
						2	3.347

Older Age Eighty-Three Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
3	1.953	63	3.053	43	3.400	23	3.494
2	2.020	62	3.079	42	3.405	22	3.496
1	2.086	61	3.105	41	3.410	21	3.497
0	2.153	60	3.130	40	3.415	20	3.499
9	2.219	59	3.156	39	3.420	19	3.500
8	2.286	58	3.182	38	3.425	18	3.502
7	2.337	57	3.212	37	3.431	17	3.505
6	2.387	56	3.241	36	3.436	16	3.508
5	2.438	55	3.271	35	3.442	15	3.510
4	2.488	54	3.300	34	3.447	14	3.513
3	2.539	53	3.330	33	3.453	13	3.516
2	2.609	52	3.343	32	3.456	12	3.518
1	2.679	51	3.356	31	3.458	11	3.519
0	2.750	50	3.369	30	3.461	10	3.521
9	2.820	49	3.382	29	3.463	9	3.522
8	2.890	48	3.395	28	3.466	8	3.524
7	2.923	47	3.396	27	3.472	7	3.530
6	2.955	46	3.397	26	3.477	6	3.500
5	2.988	45	3.398	25	3.483	5	3.463
4	3.020	44	3.399	24	3.488	4	3.398
						3	3.311

Value of £1 per Annum during the joint Continuance of Two Lives (Carlisle 3½ per Cent.)

Older Age Eighty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
84	1.803	64	2.869	44	3.206	24	3
83	1.868	63	2.890	43	3.209	23	3
82	1.932	62	2.911	42	3.212	22	3
81	1.997	61	2.933	41	3.216	21	3
80	2.061	60	2.954	40	3.219	20	3
79	2.126	59	2.975	39	3.222	19	3
78	2.172	58	3.005	38	3.228	18	3
77	2.218	57	3.035	37	3.234	17	3
76	2.264	56	3.065	36	3.239	16	3
75	2.310	55	3.095	35	3.245	15	3
74	2.356	54	3.125	34	3.251	14	3
73	2.424	53	3.139	33	3.253	13	3
72	2.491	52	3.154	32	3.255	12	3
71	2.559	51	3.168	31	3.257	11	3
70	2.626	50	3.183	30	3.259	10	3
69	2.694	49	3.197	29	3.261	9	3
68	2.729	48	3.199	28	3.267	8	3
67	2.764	47	3.201	27	3.272	7	3
66	2.799	46	3.202	26	3.278	6	3
65	2.834	45	3.204	25	3.283	5	3
						4	3

Older Age Eighty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	V
85	1.638	65	2.676	45	3.003	25	3
84	1.704	64	2.694	44	3.005	24	3
83	1.770	63	2.712	43	3.007	23	3
82	1.836	62	2.730	42	3.008	22	3
81	1.902	61	2.748	41	3.010	21	3
80	1.968	60	2.766	40	3.012	20	3
79	2.012	59	2.795	39	3.018	19	3
78	2.056	58	2.824	38	3.024	18	3
77	2.099	57	2.853	37	3.030	17	3
76	2.143	56	2.882	36	3.036	16	3
75	2.187	55	2.911	35	3.042	15	3
74	2.247	54	2.926	34	3.044	14	3
73	2.306	53	2.942	33	3.046	13	3
72	2.366	52	2.957	32	3.049	12	3
71	2.425	51	2.973	31	3.051	11	3
70	2.485	50	2.988	30	3.053	10	3
69	2.523	49	2.991	29	3.057	9	3
68	2.561	48	2.994	28	3.062	8	3
67	2.600	47	2.997	27	3.066	7	3
66	2.638	46	3.000	26	3.071	6	3
						5	3

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Eighty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
86	1.492	64	2.538	42	2.829	20	2.903
85	1.556	63	2.556	41	2.830	19	2.904
84	1.620	62	2.574	40	2.835	18	2.904
83	1.683	61	2.592	39	2.841	17	2.905
82	1.747	60	2.618	38	2.846	16	2.906
81	1.811	59	2.643	37	2.852	15	2.909
80	1.856	58	2.669	36	2.857	14	2.912
79	1.900	57	2.694	35	2.860	13	2.915
78	1.945	56	2.720	34	2.862	12	2.918
77	1.989	55	2.736	33	2.865	11	2.921
76	2.034	54	2.752	32	2.867	10	2.971
75	2.085	53	2.769	31	2.870	9	3.024
74	2.136	52	2.785	30	2.874	8	3.015
73	2.187	51	2.801	29	2.877	7	2.953
72	2.238	50	2.806	28	2.881	6	2.894
71	2.289	49	2.811	27	2.884		
70	2.332	48	2.816	26	2.888		
69	2.374	47	2.821	25	2.891		
68	2.417	46	2.826	24	2.894		
67	2.459	45	2.827	23	2.896		
66	2.502	44	2.828	22	2.899		
65	2.520	43	2.828	21	2.902		

Older Age Eighty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
87	1.374	65	2.392	43	2.682	21	2.751
86	1.436	64	2.411	42	2.682	20	2.752
85	1.498	63	2.431	41	2.687	19	2.752
84	1.560	62	2.450	40	2.691	18	2.753
83	1.622	61	2.472	39	2.696	17	2.754
82	1.684	60	2.493	38	2.700	16	2.757
81	1.729	59	2.515	37	2.705	15	2.759
80	1.774	58	2.536	36	2.708	14	2.762
79	1.820	57	2.558	35	2.711	13	2.764
78	1.865	56	2.576	34	2.714	12	2.767
77	1.910	55	2.594	33	2.717	11	2.766
76	1.952	54	2.611	32	2.720	10	2.764
75	1.994	53	2.629	31	2.723	9	2.763
74	2.037	52	2.647	30	2.726	8	2.761
73	2.079	51	2.654	29	2.728	7	2.760
72	2.121	50	2.660	28	2.731		
71	2.167	49	2.667	27	2.734		
70	2.214	48	2.673	26	2.737		
69	2.260	47	2.680	25	2.740		
68	2.307	46	2.680	24	2.744		
67	2.353	45	2.681	23	2.747		
66	2.372	44	2.681	22	2.750		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.315	65	2.317	42	2.597	19	2.661
87	1.369	64	2.338	41	2.600	18	2.662
86	1.424	63	2.360	40	2.604	17	2.664
85	1.478	62	2.378	39	2.607	16	2.666
84	1.533	61	2.396	38	2.611	15	2.668
83	1.587	60	2.414	37	2.615	14	2.670
82	1.635	59	2.432	36	2.618	13	2.672
81	1.683	58	2.450	35	2.622	12	2.673
80	1.730	57	2.470	34	2.625	11	2.674
79	1.778	56	2.490	33	2.629	10	2.674
78	1.826	55	2.509	32	2.631	9	2.675
77	1.862	54	2.529	31	2.633	8	2.676
76	1.898	53	2.549	30	2.634		
75	1.934	52	2.558	29	2.636		
74	1.970	51	2.566	28	2.638		
73	2.006	50	2.575	27	2.642		
72	2.055	49	2.583	26	2.646		
71	2.104	48	2.592	25	2.649		
70	2.154	47	2.592	24	2.653		
69	2.203	46	2.592	23	2.657		
68	2.252	45	2.593	22	2.658		
67	2.274	44	2.593	21	2.659		
66	2.295	43	2.593	20	2.660		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.235	66	2.207	43	2.493	20	2.555
88	1.284	65	2.231	42	2.496	19	2.556
87	1.333	64	2.256	41	2.498	18	2.557
86	1.382	63	2.271	40	2.501	17	2.559
85	1.431	62	2.286	39	2.503	16	2.560
84	1.480	61	2.301	38	2.507	15	2.562
83	1.527	60	2.316	37	2.511	14	2.563
82	1.575	59	2.331	36	2.516	13	2.565
81	1.622	58	2.352	35	2.520	12	2.567
80	1.670	57	2.373	34	2.524	11	2.570
79	1.717	56	2.395	33	2.525	10	2.572
78	1.751	55	2.416	32	2.526	9	2.574
77	1.785	54	2.437	31	2.528		
76	1.818	53	2.447	30	2.529		
75	1.852	52	2.457	29	2.530		
74	1.886	51	2.467	28	2.534		
73	1.935	50	2.477	27	2.538		
72	1.985	49	2.487	26	2.542		
71	2.034	48	2.488	25	2.546		
70	2.084	47	2.489	24	2.550		
69	2.133	46	2.489	23	2.551		
68	2.158	45	2.490	22	2.552		
67	2.182	44	2.491	21	2.554		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Ninety Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.077	67	2.043	44	2.337	21	2.394
1.126	66	2.071	43	2.338	20	2.396
1.175	65	2.099	42	2.340	19	2.397
1.223	64	2.112	41	2.341	18	2.398
1.272	63	2.125	40	2.342	17	2.399
1.321	62	2.139	39	2.346	16	2.400
1.371	61	2.152	38	2.350	15	2.401
1.421	60	2.165	37	2.355	14	2.403
1.470	59	2.186	36	2.359	13	2.406
1.520	58	2.207	35	2.363	12	2.408
1.570	57	2.229	34	2.365	11	2.411
1.603	56	2.250	33	2.366	10	2.413
1.636	55	2.271	32	2.368		
1.669	54	2.282	31	2.369		
1.702	53	2.293	30	2.371		
1.735	52	2.305	29	2.374		
1.780	51	2.316	28	2.378		
1.825	50	2.327	27	2.381		
1.869	49	2.329	26	2.385		
1.914	48	2.331	25	2.388		
1.959	47	2.332	24	2.390		
1.987	46	2.334	23	2.391		
2.015	45	2.336	22	2.393		

Older Age Ninety-One Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
1.039	68	1.996	45	2.319	22	2.376
1.080	67	2.030	44	2.320	21	2.378
1.120	66	2.065	43	2.320	20	2.379
1.161	65	2.079	42	2.321	19	2.379
1.201	64	2.093	41	2.321	18	2.380
1.242	63	2.108	40	2.325	17	2.380
1.294	62	2.122	39	2.329	16	2.381
1.346	61	2.136	38	2.334	15	2.383
1.398	60	2.156	37	2.338	14	2.386
1.450	59	2.176	36	2.342	13	2.388
1.502	58	2.196	35	2.344	12	2.391
1.539	57	2.216	34	2.346	11	2.393
1.575	56	2.236	33	2.349		
1.612	55	2.249	32	2.351		
1.648	54	2.262	31	2.353		
1.685	53	2.275	30	2.356		
1.726	52	2.288	29	2.359		
1.768	51	2.301	28	2.361		
1.809	50	2.305	27	2.364		
1.851	49	2.308	26	2.367		
1.892	48	2.312	25	2.369		
1.927	47	2.315	24	2.371		
1.961	46	2.319	23	2.374		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
92	1.108	72	1.913	52	2.383	32	2.445
91	1.133	71	1.955	51	2.389	31	2.447
90	1.157	70	1.997	50	2.394	30	2.449
89	1.182	69	2.040	49	2.400	29	2.451
88	1.206	68	2.082	48	2.405	28	2.453
87	1.231	67	2.124	47	2.411	27	2.455
86	1.287	66	2.141	46	2.411	26	2.458
85	1.344	65	2.158	45	2.411	25	2.461
84	1.400	64	2.175	44	2.410	24	2.464
83	1.457	63	2.192	43	2.410	23	2.667
82	1.513	62	2.209	42	2.410	22	2.470
81	1.555	61	2.228	41	2.414	21	2.471
80	1.596	60	2.247	40	2.418	20	2.471
79	1.638	59	2.265	39	2.422	19	2.472
78	1.679	58	2.284	38	2.426	18	2.472
77	1.721	57	2.303	37	2.430	17	2.473
76	1.759	56	2.319	36	2.433	16	2.475
75	1.798	55	2.335	35	2.436	15	2.477
74	1.836	54	2.351	34	2.439	14	2.480
73	1.875	53	2.367	33	2.442	13	2.482
						12	2.484

Older Age Ninety-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
93	1.212	73	1.950	53	2.478	33	2.550
92	1.221	72	1.999	52	2.486	32	2.551
91	1.230	71	2.048	51	2.494	31	2.553
90	1.240	70	2.097	50	2.501	30	2.554
89	1.249	69	2.146	49	2.509	29	2.556
88	1.258	68	2.195	48	2.517	28	2.557
87	1.313	67	2.216	47	2.517	27	2.561
86	1.367	66	2.237	46	2.516	26	2.565
85	1.422	65	2.257	45	2.516	25	2.568
84	1.476	64	2.278	44	2.515	24	2.572
83	1.531	63	2.299	43	2.515	23	2.576
82	1.579	62	2.316	42	2.518	22	2.577
81	1.627	61	2.332	41	2.522	21	2.578
80	1.676	60	2.349	40	2.525	20	2.578
79	1.724	59	2.365	39	2.529	19	2.579
78	1.772	58	2.382	38	2.532	18	2.580
77	1.808	57	2.401	37	2.536	17	2.582
76	1.843	56	2.420	36	2.539	16	2.584
75	1.879	55	2.440	35	2.543	15	2.585
74	1.914	54	2.459	34	2.546	14	2.587
						13	2.589

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.287	74	1.956	54	2.520	34	2.599
93	1.280	73	2.008	53	2.529	33	2.600
92	1.273	72	2.060	52	2.538	32	2.601
91	1.267	71	2.113	51	2.548	31	2.602
90	1.260	70	2.165	50	2.557	30	2.603
89	1.253	69	2.217	49	2.566	29	2.604
88	1.306	68	2.242	48	2.566	28	2.608
87	1.359	67	2.266	47	2.566	27	2.612
86	1.413	66	2.291	46	2.566	26	2.616
85	1.466	65	2.315	45	2.566	25	2.620
84	1.519	64	2.340	44	2.566	24	2.624
83	1.571	63	2.354	43	2.568	23	2.625
82	1.623	62	2.368	42	2.570	22	2.626
81	1.674	61	2.382	41	2.573	21	2.628
80	1.726	60	2.396	40	2.575	20	2.629
79	1.778	59	2.410	39	2.577	19	2.630
78	1.814	58	2.432	38	2.581	18	2.631
77	1.849	57	2.454	37	2.586	17	2.633
76	1.885	56	2.476	36	2.590	16	2.634
75	1.920	55	2.498	35	2.595	15	2.636
						14	2.637

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.368	75	1.967	55	2.537	35	2.623
94	1.335	74	2.017	54	2.548	34	2.624
93	1.302	73	2.067	53	2.558	33	2.626
92	1.270	72	2.117	52	2.569	32	2.627
91	1.237	71	2.167	51	2.579	31	2.629
90	1.204	70	2.217	50	2.590	30	2.630
89	1.262	69	2.246	49	2.591	29	2.634
88	1.319	68	2.276	48	2.592	28	2.637
87	1.377	67	2.305	47	2.592	27	2.641
86	1.434	66	2.335	46	2.593	26	2.644
85	1.492	65	2.364	45	2.594	25	2.648
84	1.550	64	2.376	44	2.595	24	2.650
83	1.609	63	2.388	43	2.596	23	2.651
82	1.667	62	2.399	42	2.597	22	2.653
81	1.726	61	2.411	41	2.598	21	2.654
80	1.784	60	2.423	40	2.599	20	2.656
79	1.821	59	2.446	39	2.604	19	2.657
78	1.857	58	2.469	38	2.609	18	2.657
77	1.894	57	2.491	37	2.613	17	2.658
76	1.930	56	2.514	36	2.618	16	2.658
						15	2.659

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.409	76	1.936	56	2.488	36	2.578
95	1.367	75	1.980	55	2.499	35	2.580
94	1.325	74	2.024	54	2.511	34	2.581
93	1.282	73	2.068	53	2.522	33	2.583
92	1.240	72	2.112	52	2.531	32	2.584
91	1.198	71	2.156	51	2.545	31	2.586
90	1.247	70	2.190	50	2.547	30	2.589
89	1.296	69	2.224	49	2.549	29	2.592
88	1.344	68	2.259	48	2.551	28	2.595
87	1.393	67	2.293	47	2.553	27	2.598
86	1.442	66	2.327	46	2.555	26	2.601
85	1.502	65	2.339	45	2.555	25	2.603
84	1.562	64	2.350	44	2.555	24	2.605
83	1.622	63	2.361	43	2.555	23	2.606
82	1.682	62	2.373	42	2.555	22	2.608
81	1.742	61	2.384	41	2.555	21	2.610
80	1.781	60	2.405	40	2.560	20	2.610
79	1.820	59	2.426	39	2.564	19	2.611
78	1.858	58	2.446	38	2.569	18	2.611
77	1.897	57	2.467	37	2.573	17	2.612
						16	2.612

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.380	77	1.853	57	2.354	37	2.446
96	1.347	76	1.888	56	2.366	36	2.448
95	1.315	75	1.923	55	2.378	35	2.450
94	1.282	74	1.959	54	2.390	34	2.452
93	1.250	73	1.994	53	2.402	33	2.454
92	1.217	72	2.029	52	2.414	32	2.456
91	1.246	71	2.066	51	2.417	31	2.458
90	1.276	70	2.103	50	2.420	30	2.460
89	1.305	69	2.141	49	2.423	29	2.461
88	1.335	68	2.178	48	2.426	28	2.463
87	1.364	67	2.215	47	2.429	27	2.465
86	1.423	66	2.226	46	2.428	26	2.467
85	1.482	65	2.237	45	2.428	25	2.470
84	1.542	64	2.248	44	2.427	24	2.472
83	1.601	63	2.259	43	2.427	23	2.475
82	1.660	62	2.270	42	2.426	22	2.477
81	1.699	61	2.287	41	2.430	21	2.477
80	1.737	60	2·304	40	2.434	20	2.477
79	1.776	59	2.320	39	2.438	19	2.477
78	1.814	58	2.337	38	2.442	18	2.477
						17	2.477

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.362	78	1.763	58	2.199	38	2.291
97	1.340	77	1.790	57	2.212	37	2.293
96	1.317	76	1.817	56	2.224	36	2.295
95	1.295	75	1.844	55	2.237	35	2.297
94	1.272	74	1.871	54	2.249	34	2.299
93	1.250	73	1.898	53	2.262	33	2.301
92	1.263	72	1.935	52	2.266	32	2.302
91	1.276	71	1.972	51	2.270	31	2.303
90	1.290	70	2.010	50	2.273	30	2.304
89	1.303	69	2.047	49	2.277	29	2.305
88	1.316	68	2.084	48	2.281	28	2.306
87	1.367	67	2.095	47	2.280	27	2.309
86	1.418	66	2.106	46	2.279	26	2.311
85	1.469	65	2.117	45	2.278	25	2.314
84	1.520	64	2.128	44	2.277	24	2.316
83	1.571	63	2.139	43	2.276	23	2.319
82	1.609	62	2.151	42	2.279	22	2.319
81	1.648	61	2.163	41	2.282	21	2.319
80	1.686	60	2.175	40	2.285	20	2.320
79	1.725	59	2.187	39	2.288	19	2.320
						18	2.320

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.283	79	1.606	59	1.969	39	2.052
98	1.271	78	1.627	58	1.981	38	2.054
97	1.259	77	1.648	57	1.993	37	2.056
96	1.247	76	1.670	56	2.005	36	2.058
95	1.235	75	1.691	55	2.017	35	2.060
94	1.223	74	1.712	54	2.029	34	2.062
93	1.223	73	1.745	53	2.033	33	2.062
92	1.223	72	1.779	52	2.036	32	2.063
91	1.222	71	1.812	51	2.040	31	2.063
90	1.222	70	1.846	50	2.043	30	2.064
89	1.222	69	1.879	49	2.047	29	2.064
88	1.265	68	1.889	48	2.046	28	2.066
87	1.308	67	1.899	47	2.045	27	2.069
86	1.351	66	1.909	46	2.045	26	2.071
85	1.394	65	1.919	45	2.044	25	2.074
84	1.437	64	1.929	44	2.043	24	2.076
83	1.471	63	1.937	43	2.045	23	2.076
82	1.505	62	1.945	42	2.047	22	2.076
81	1.538	61	1.953	41	2.048	21	2.077
80	1.572	60	1.961	40	2.050	20	2.077
						19	2.077

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age	Value.	Age.	Value.
100	0.984	79	1.320	58	1.582	37	1.632
99	1.000	78	1.335	57	1.591	36	1.633
98	1.016	77	1.351	56	1.601	35	1.635
97	1.031	76	1.366	55	1.610	34	1.635
96	1.047	75	1.381	54	1.613	33	1.635
95	1.063	74	1.405	53	1.616	32	1.636
94	1.045	73	1.429	52	1.619	31	1.637
93	1.026	72	1.452	51	1.622	30	1.637
92	1.008	71	1.476	50	1.625	29	1.639
91	0.989	70	1.500	49	1.625	28	1.640
90	0.971	69	1.508	48	1.624	27	1.642
89	1.009	68	1.517	47	1.624	26	1.643
88	1.047	67	1.525	46	1.623	25	1.645
87	1.085	66	1.534	45	1.623	24	1.645
86	1.123	65	1.542	44	1.624	23	1.645
85	1.161	64	1.546	43	1.625	22	1.646
84	1.190	63	1.550	42	1.625	21	1.646
83	1.219	62	1.555	41	1.626	20	1.646
82	1.247	61	1.559	40	1.627		
81	1.276	60	1.563	39	1.629		
80	1.305	59	1.572	38	1.630		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
101	0.683	80	0.988	59	1.164	38	1.196
100	0.715	79	0.999	58	1.170	37	1.197
99	0.748	78	1.009	57	1.176	36	1.198
98	0.780	77	1.020	56	1.182	35	1.198
97	0.813	76	1.031	55	1.184	34	1.199
96	0.845	75	1.046	54	1.186	33	1.199
95	0.825	74	1.060	53	1.188	32	1.200
94	0.806	73	1.075	52	1.190	31	1.200
93	0.787	72	1.089	51	1.192	30	1.201
92	0.767	71	1.104	50	1.192	29	1.202
91	0.748	70	1.111	49	1.192	28	1.203
90	0.773	69	1.118	48	1.192	27	1.204
89	0.798	68	1.125	47	1.192	26	1.205
88	0.823	67	1.132	46	1.192	25	1.205
87	0.848	66	1.139	45	1.192	24	1.205
86	0.873	65	1.142	44	1.192	23	1.206
85	0.894	64	1.144	43	1.193	22	1.206
84	0.915	63	1.147	42	1.193	21	1.206
83	0.935	62	1.149	41	1.193		
82	0.956	61	1.152	40	1.194		
81	0.977	60	1.158	39	1.195		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 3½ per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
102	.385	81	.640	60	.737	39	.754
101	.421	80	.647	59	.740	38	.755
100	.457	79	.653	58	.743	37	.755
99	.493	78	.660	57	.746	36	.755
98	.529	77	.666	56	.747	35	.756
97	.565	76	.673	55	.748	34	.756
96	.555	75	.680	54	.750	33	.757
95	.546	74	.687	53	.751	32	.757
94	.536	73	.694	52	.752	31	.757
93	.527	72	.701	51	.752	30	.758
92	.517	71	.706	50	.752	29	.758
91	.527	70	.710	49	.753	28	.759
90	.538	69	.715	48	.753	27	.759
89	.548	68	.719	47	.753	26	.759
88	.559	67	.724	46	.753	25	.759
87	.569	66	.725	45	.753	24	.760
86	.582	65	.727	44	.753	23	.760
85	.595	64	.728	43	.753	22	.760
84	.608	63	.730	42	.753		
83	.621	62	.731	41	.753		
82	.634	61	.734	40	.754		

Older Age One Hundred and Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
103	.107	82	.276	61	.312	40	.317
102	.136	81	.279	60	.312	39	.317
101	.165	80	.281	59	.313	38	.317
100	.195	79	.284	58	.314	37	.317
99	.224	78	.287	57	.315	36	.318
98	.253	77	.289	56	.315	35	.318
97	.250	76	.291	55	.316	34	.319
96	.247	75	.293	54	.316	33	.319
95	.245	74	.295	53	.317	32	.319
94	.242	73	.297	52	.317	31	.319
93	.239	72	.299	51	.317	30	.319
92	.241	71	.301	50	.317	29	.319
91	.244	70	.303	49	.317	28	.319
90	.246	69	.305	48	.317	27	.319
89	.249	68	.307	47	.317	26	.319
88	.251	67	.308	46	.317	25	.320
87	.255	66	.308	45	.317	24	.320
86	.260	65	.309	44	.317	23	.320
85	.264	64	.309	43	.317		
84	.269	63	.310	42	.317		
83	.273	62	.311	41	.317		

Value of £1 per Annum during the joint Continuance of Two Lives
(Carlisle 4½ per Cent.)

Older Age 0 Years.

Age.	Value.
0	8.259

Older Age One Year

Age.	Value.
1	11.056
0	8.871

Older Age Two Years.

Age.	Value.
2	12.669
1	11.492
0	9.484

Older Age Three Yea

Age.	Value.
3	14.141
2	12.981
1	11.928
0	10.096

Older Age Four Years.

Age.	Value.
4	14.966
3	14.322
2	13.294
1	12.364
0	10.709

Older Age Five Year

Age.	Value.
5	15.578
4	15.063
3	14.503
2	13.606
1	12.800
0	11.321

Older Age Six Years.

Age.	Value.	Age.	Value.
6	15.874	2	13.919
5	15.604	1	13.236
4	15.160	0	11.339
3	14.683		

Older Age Seven Year

Age.	Value.	Age.	
7	16.004	3	1
6	15.857	2	1
5	15.630	1	1
4	15.257	0	1

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Eight Years.			Older Age Nine Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
16.022	3	15.045	9	15.966	4	15.451
15.960	2	14.190	8	15.963	3	14.987
15.840	1	13.204	7	15.916	2	14.149
15.656	0	11.375	6	15.822	1	13.189
15.354			5	15.682	0	11.393

Older Age Ten Years.			Older Age Eleven Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.855	4	15.383	11	15.718	5	15.636
15.898	3	14.929	10	15.785	4	15.315
15.903	2	14.109	9	15.831	3	14.871
15.873	1	13.173	8	15.844	2	14.068
15.805	0	11.411	7	15.829	1	13.157
15.708			6	15.788	0	11.358

lder Age Twelve Years.			Older Age Thirteen Years.			
Value.	Age.	Value.	Age.	Value.	Age.	Value.
15.585	5	15.564	13	15.450	6	15.645
15.625	4	15.246	12	15.505	5	15.491
15.665	3	14.813	11	15.560	4	15.178
15.705	2	14.027	10	15.615	3	14.755
15.745	1	13.096	9	15.670	2	13.963
15.785	0	11.305	8	15.725	1	13.036
15.716			7	15.715	0	11.252

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fourteen Years.				Older Age Fifteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
14	15.314	6	15.573	15	15.182	7	15.576
13	15.377	5	15.419	14	15.247	6	15.503
12	15.440	4	15.110	13	15.312	5	15.347
11	15.502	3	14.689	12	15.376	4	15.044
10	15.565	2	13.899	11	15.441	3	14.623
9	15.628	1	12.974	10	15.506	2	13.835
8	15.657	0	11.199	9	15.562	1	12.913
7	15.645			8	15.590	0	11.146

Older Age Sixteen Years.				Older Age Seventeen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
16	15.063	7	15.506	17	14.954	8	15.400
15	15.126	6	15.430	16	15.015	7	15.436
14	15.189	5	15.280	15	15.075	6	15.361
13	15.252	4	14.977	14	15.136	5	15.213
12	15.315	3	14.557	13	15.196	4	14.911
11	15.378	2	13.771	12	15.257	3	14.491
10	15.441	1	12.852	11	15.293	2	13.707
9	15.496	0	11.097	10	15.329	1	12.794
8	15.522			9	15.364	0	11.048

Older Age Eighteen Years.				Older Age Nineteen Years.			
Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
18	14.846	8	15.387	19	14.732	9	15.299
17	14.904	7	15.363	18	14.788	8	15.310
16	14.962	6	15.292	17	14.843	7	15.290
15	15.019	5	15.146	16	14.899	6	15.224
14	15.077	4	14.844	15	14.954	5	15.079
13	15.135	3	14.425	14	15.010	4	14.778
12	15.185	2	13.641	13	15.068	3	14.351
11	15.236	1	12.735	12	15.126	2	13.575
10	15.286	0	10.999	11	15.183	1	12.677
9	15.337			10	15.241	0	10.950

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Twenty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
20	14.613	14	14.944	8	15.233	2	13.508
19	14.667	13	15.004	7	15.218	1	12.618
18	14.721	12	15.063	6	15.155	0	10.901
17	14.776	11	15.123	5	15.012		
16	14.830	10	15.183	4	14.697		
15	14.884	9	15.218	3	14.276		

Older Age Twenty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
21	14.489	15	14.820	9	15.137	3	14.202
20	14.544	14	14.878	8	15.156	2	13.442
19	14.598	13	14.935	7	15.145	1	12.560
18	14.653	12	14.993	6	15.086	0	10.838
17	14.707	11	15.051	5	14.925		
16	14.762	10	15.097	4	14.616		

Older Age Twenty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
22	14.353	16	14.694	10	14.978	4	14.535
21	14.410	15	14.749	9	15.009	3	14.127
20	14.467	14	14.805	8	15.041	2	13.376
19	14.525	13	14.860	7	15.072	1	12.482
18	14.582	12	14.915	6	14.993	0	10.775
17	14.639	11	14.946	5	14.837		

Older Age Twenty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
23	14.211	16	14.617	9	14.956	2	13.288
22	14.271	15	14.670	8	15.002	1	12.404
21	14.332	14	14.722	7	14.974	0	10.711
20	14.392	13	14.774	6	14.900		
19	14.453	12	14.820	5	14.750		
18	14.513	11	14.865	4	14.454		
17	14.565	10	14.911	3	14.053		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Twenty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
24	14.062	17	14.480	10	14.840	3	13.956
23	14.126	16	14.530	9	14.893	2	13.199
22	14.189	15	14.580	8	14.901	1	12.325
21	14.253	14	14.630	7	14.877	0	10.648
20	14.316	13	14.683	6	14.807		
19	14.380	12	14.735	5	14.662		
18	14.430	11	14.788	4	14.373		

Older Age Twenty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
25	13.905	18	14.338	11	14.701	4	14.272
24	13.972	17	14.387	10	14.755	3	13.859
23	14.040	16	14.435	9	14.791	2	13.111
22	14.107	15	14.483	8	14.799	1	12.247
21	14.175	14	14.537	7	14.779	0	10.583
20	14.242	13	14.592	6	14.714		
19	14.290	12	14.646	5	14.575		

Older Age Twenty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
26	13.746	19	14.196	12	14.550	5	14.474
25	13.817	18	14.244	11	14.602	4	14.171
24	13.887	17	14.293	10	14.655	3	13.765
23	13.958	16	14.341	9	14.689	2	13.022
22	14.028	15	14.393	8	14.698	1	12.169
21	14.099	14	14.445	7	14.682	0	10.512
20	14.147	13	14.498	6	14.621		

Older Age Twenty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
27	13.579	20	14.048	13	14.398	6	14.521
26	13.652	19	14.098	12	14.447	5	14.372
25	13.726	18	14.149	11	14.474	4	14.069
24	13.799	17	14.200	10	14.502	3	13.665
23	13.873	16	14.249	9	14.529	2	12.934
22	13.946	15	14.299	8	14.557	1	12.085
21	13.997	14	14.348	7	14.584	0	10.439

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.

Older Age Twenty-Eight Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
13.413	20	13.952	12	14.333	4	13.968
13.489	19	14.006	11	14.373	3	13.568
13.565	18	14.059	10	14.414	2	12.846
13.640	17	14.106	9	14.454	1	12.001
13.716	16	14.152	8	14.495	0	10.365
13.792	15	14.199	7	14.486		
13.845	14	14.245	6	14.421		
13.899	13	14.292	5	14.271		

Older Age Twenty-Nine Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9	13.264	21	13.811	13	14.192	5	14.169
8	13.340	20	13.868	12	14.240	4	13.867
7	13.415	19	13.924	11	14.287	3	13.475
6	13.491	18	13.968	10	14.335	2	12.758
5	13.566	17	14.012	9	14.382	1	11.918
4	13.642	16	14.057	8	14.398	0	10.292
3	13.698	15	14.101	7	14.388		
2	13.755	14	14.145	6	14.320		

Older Age Thirty Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
0	13.137	22	13.679	14	14.060	6	14.220
9	13.210	21	13.739	13	14.109	5	14.068
8	13.282	20	13.799	12	14.158	4	13.769
7	13.355	19	13.841	11	14.207	3	13.382
6	13.427	18	13.884	10	14.256	2	12.669
5	13.500	17	13.926	9	14.283	1	11.834
4	13.560	16	13.969	8	14.301	0	10.219
3	13.620	15	14.011	7	14.289		

Older Age Thirty-One Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	13.010	23	13.545	15	13.930	7	14.191
0	13.079	22	13.608	14	13.977	6	14.120
9	13.148	21	13.671	13	14.023	5	13.963
8	13.218	20	13.713	12	14.070	4	13.672
7	13.287	19	13.756	11	14.117	3	13.290
6	13.356	18	13.798	10	14.152	2	12.581
5	13.419	17	13.841	9	14.184	1	11.750
4	13.482	16	13.883	8	14.204	0	10.143

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 4½ per Cent.)

Older Age Thirty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
32	12.877	23	13.468	14	13.889	5	13.858
31	12.943	22	13.534	13	13.933	4	13.574
30	13.009	21	13.578	12	13.977	3	13.197
29	13.074	20	13.623	11	14.000	2	12.493
28	13.140	19	13.667	10	14.023	1	11.656
27	13.206	18	13.712	9	14.047	0	10.068
26	13.272	17	13.756	8	14.070		
25	13.337	16	13.800	7	14.093		
24	13.403	15	13.844	6	14.007		

Older Age Thirty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
33	12.733	24	13.321	15	13.747	6	13.895
32	12.797	23	13.389	14	13.788	5	13.752
31	12.860	22	13.436	13	13.829	4	13.477
30	12.924	21	13.483	12	13.865	3	13.104
29	12.987	20	13.529	11	13.901	2	12.386
28	13.051	19	13.576	10	13.938	1	11.562
27	13.119	18	13.623	9	13.974	0	9.992
26	13.186	17	13.664	8	14.010		
25	13.254	16	13.705	7	13.974		

Older Age Thirty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
34	12.578	25	13.167	16	13.597	7	13.854
33	12.642	24	13.234	15	13.636	6	13.782
32	12.706	23	13.284	14	13.674	5	13.647
31	12.769	22	13.333	13	13.717	4	13.379
30	12.833	21	13.383	12	13.759	3	12.985
29	12.897	20	13.432	11	13.802	2	12.279
28	12.964	19	13.482	10	13.841	1	11.469
27	13.032	18	13.520	9	13.887	0	9.917
26	13.099	17	13.559	8	13.885		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 4½ per Cent.)

Older Age Thirty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
35	12.415	26	13.007	17	13.443	8	13.760
34	12.482	25	13.071	16	13.479	7	13.735
33	12.549	24	13.123	15	13.516	6	13.670
32	12.617	23	13.176	14	13.560	5	13.542
31	12.684	22	13.228	13	13.604	4	13.252
30	12.751	21	13.281	12	13.648	3	12.867
29	12.815	20	13.333	11	13.692	2	12.173
28	12.879	19	13.370	10	13.736	1	11.375
27	12.943	18	13.406	9	13.757	0	9.841

Older Age Thirty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
36	12.244	26	12.902	16	13.360	6	13.557
35	12.315	25	12.957	15	13.402	5	13.409
34	12.386	24	13.012	14	13.443	4	13.125
33	12.458	23	13.068	13	13.485	3	12.748
32	12.529	22	13.123	12	13.526	2	12.066
31	12.600	21	13.178	11	13.568	1	11.281
30	12.660	20	13.214	10	13.603	0	9.746
29	12.721	19	13.251	9	13.627		
28	12.781	18	13.287	8	13.635		
27	12.842	17	13.324	7	13.615		

Older Age Thirty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
37	12.069	27	12.728	17	13.205	7	13.496
36	12.144	26	12.785	16	13.244	6	13.421
35	12.219	25	12.843	15	13.283	5	13.276
34	12.295	24	12.900	14	13.321	4	12.997
33	12.370	23	12.958	13	13.360	3	12.630
32	12.445	22	13.015	12	13.399	2	11.959
31	12.502	21	13.053	11	13.418	1	11.168
30	12.558	20	13.091	10	13.438	0	9.650
29	12.615	19	13.129	9	13.457		
28	12.671	18	13.167	8	13.477		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Thirty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
38	11.890	28	12.551	18	13.048	8	13.385
37	11.969	27	12.610	17	13.084	7	13.360
36	12.047	26	12.669	16	13.120	6	13.286
35	12.126	25	12.729	15	13.155	5	13.142
34	12.204	24	12.788	14	13.191	4	12.870
33	12.283	23	12.847	13	13.227	3	12.511
32	12.337	22	12.887	12	13.259	2	11.838
31	12.390	21	12.927	11	13.290	1	11.055
30	12.444	20	12.968	10	13.322	0	9.555
29	12.497	19	13.008	9	13.353		

Older Age Thirty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
39	11.708	29	12.381	19	12.886	9	13.238
38	11.789	28	12.439	18	12.919	8	13.250
37	11.870	27	12.498	17	12.952	7	13.224
36	11.950	26	12.556	16	12.985	6	13.150
35	12.031	25	12.615	15	13.018	5	13.008
34	12.112	24	12.673	14	13.051	4	12.743
33	12.166	23	12.716	13	13.088	3	12.383
32	12.220	22	12.758	12	13.126	2	11.716
31	12.273	21	12.801	11	13.163	1	10.943
30	12.327	20	12.843	10	13.201	0	9.459

Older Age Forty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
40	11.531	29	12.279	18	12.786	7	13.088
39	11.613	28	12.334	17	12.817	6	13.015
38	11.695	27	12.388	16	12.848	5	12.875
37	11.776	26	12.443	15	12.879	4	12.611
36	11.858	25	12.498	14	12.918	3	12.255
35	11.940	24	12.543	13	12.956	2	11.595
34	11.997	23	12.588	12	12.995	1	10.830
33	12.054	22	12.634	11	13.033	0	9.364
32	12.110	21	12.679	10	13.072		
31	12.167	20	12.724	9	13.104		
30	12.224	19	12.755	8	13.115		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Forty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
41	11.369	30	12.125	19	12.629	8	12.979
40	11.450	29	12.176	18	12.659	7	12.952
39	11.531	28	12.228	17	12.690	6	12.879
38	11.611	27	12.279	16	12.721	5	12.740
37	11.692	26	12.330	15	12.757	4	12.480
36	11.773	25	12.377	14	12.794	3	12.127
35	11.833	24	12.425	13	12.830	2	11.473
34	11.893	23	12.472	12	12.867	1	10.717
33	11.954	22	12.520	11	12.903	0	9.267
32	12.014	21	12.567	10	12.937		
31	12.074	20	12.598	9	12.969		

Older Age Forty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
42	11.215	31	11.973	20	12.473	9	12.785
41	11.294	30	12.020	19	12.506	8	12.800
40	11.372	29	12.068	18	12.538	7	12.816
39	11.451	28	12.115	17	12.570	6	12.738
38	11.529	27	12.162	16	12.604	5	12.604
37	11.608	26	12.211	15	12.637	4	12.348
36	11.672	25	12.261	14	12.671	3	11.999
35	11.735	24	12.310	13	12.704	2	11.352
34	11.799	23	12.360	12	12.738	1	10.600
33	11.862	22	12.409	11	12.754	0	9.171
32	11.926	21	12.441	10	12.769		

Older Age Forty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
43	11.064	32	11.818	21	12.313	10	12.655
42	11.140	31	11.862	20	12.352	9	12.682
41	11.215	30	11.907	19	12.386	8	12.709
40	11.291	29	11.951	18	12.420	7	12·667
39	11.366	28	11.996	17	12.451	6	12.597
38	11.442	27	12.047	16	12.481	5	12.469
37	11.508	26	12.098	15	12.512	4	12.217
36	11.574	25	12.148	14	12.542	3	11.871
35	11.641	24	12.199	13	12.573	2	11.220
34	11.707	23	12.250	12	12.600	1	10.483
33	11.773	22	12.284	11	12.627	0	9.074

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Forty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
44	10.906	32	11.700	20	12.227	8	12.550
43	10.979	31	11.744	19	12.263	7	12.519
42	11.052	30	11.788	18	12.291	6	12.455
41	11.125	29	11.832	17	12.319	5	12.333
40	11.198	28	11.882	16	12.347	4	12.085
39	11.271	27	11.932	15	12.375	3	11.722
38	11.339	26	11.982	14	12.403	2	11.088
37	11.407	25	12.032	13	12.436	1	10.367
36	11.476	24	12.082	12	12.468	0	8.978
35	11.544	23	12.118	11	12.501		
34	11.612	22	12.154	10	12.533		
33	11.656	21	12.191	9	12.566		

Older Age Forty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
45	10.742	33	11.536	21	12.061	9	12.395
44	10.813	32	11.582	20	12.099	8	12.392
43	10.885	31	11.629	19	12.125	7	12.370
42	10.956	30	11.675	18	12.151	6	12.314
41	11.028	29	11.721	17	12.177	5	12.198
40	11.099	28	11.768	16	12.203	4	11.919
39	11.168	27	11.814	15	12.229	3	11.573
38	11.237	26	11.861	14	12.263	2	10.955
37	11.305	25	11.907	13	12.296	1	10.250
36	11.374	24	11.945	12	12.330	0	8.881
35	11.443	23	11.984	11	12.363		
34	11.489	22	12.022	10	12.397		

Older Age Forty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
46	10.565	34	11.362	22	11.885	10	12.212
45	10.638	33	11.412	21	11.925	9	12.224
44	10.710	32	11.461	20	11.950	8	12.233
43	10.783	31	11.510	19	11.976	7	12.222
42	10.855	30	11.553	18	12.001	6	12.173
41	10.928	29	11.595	17	12.027	5	12.014
40	10.995	28	11.638	16	12.052	4	11.753
39	11.062	27	11.680	15	12.083	3	11.423
38	11.130	26	11.723	14	12.115	2	10.823
37	11.197	25	11.763	13	12.146	1	10.133
36	11.264	24	11.804	12	12.178	0	8.751
35	11.313	23	11.844	11	12.209		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Forty-Seven Years.

.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
	10.375	35	11.179	23	11.695	11	12.025
	10.451	34	11.231	22	11.737	10	12.037
	10.526	33	11.283	21	11.764	9	12.049
	10.602	32	11.335	20	11.790	8	12.061
	10.677	31	11.373	19	11.817	7	12.073
	10.753	30	11.412	18	11.843	6	11.971
	10.817	29	11.450	17	11.870	5	11.830
	10.882	28	11.489	16	11.899	4	11.587
	10.946	27	11.527	15	11.927	3	11.274
	11.011	26	11.569	14	11.956	2	10.691
	11.075	25	11.611	13	11.984	1	9.967
	11.127	24	11.653	12	12.013	0	8.620

Older Age Forty-Eight Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
8	10.166	35	11.036	22	11.563	9	11.893
7	10.247	34	11.090	21	11.591	8	11.916
6	10.328	33	11.144	20	11.619	7	11.854
5	10.408	32	11.179	19	11.647	6	11.768
4	10.489	31	11.214	18	11.675	5	11.645
3	10.570	30	11.250	17	11.701	4	11.421
2	10.631	29	11.285	16	11.726	3	11.125
1	10.692	28	11.320	15	11.752	2	10.498
0	10.752	27	11.363	14	11.777	1	9.800
9	10.813	26	11.406	13	11.803	0	8.490
8	10.874	25	11.449	12	11.826		
7	10.928	24	11.492	11	11.848		
6	10.982	23	11.535	10	11.871		

Older Age Forty-Nine Years.

ge.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
9	9.926	36	10.820	23	11.341	10	11.684
8	10.014	35	10.875	22	11.371	9	11.712
7	10.102	34	10.930	21	11.400	8	11.684
6	10.191	33	10.964	20	11.430	7	11.635
5	10.279	32	10.999	19	11.460	6	11.566
4	10.367	31	11.033	18	11.483	5	11.461
3	10.424	30	11.068	17	11.506	4	11.255
2	10.482	29	11.102	16	11.528	3	10.907
1	10.539	28	11.144	15	11.551	2	10.305
0	10.597	27	11.186	14	11.574	1	9.634
9	10.654	26	11.227	13	11.602	0	8.359
8	10.709	25	11.269	12	11.629		
7	10.764	24	11.311	11	11.657		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fifty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
50	9.663	37	10.589	24	11.102	11	11.445
49	9.760	36	10.644	23	11.133	10	11.473
48	9.857	35	10.699	22	11.165	9	11.469
47	9.955	34	10.735	21	11.196	8	11.451
46	10.052	33	10.771	20	11.228	7	11.417
45	10.149	32	10.807	19	11.249	6	11.363
44	10.204	31	10.843	18	11.269	5	11.277
43	10.259	30	10.879	17	11.290	4	11.020
42	10.313	29	10.917	16	11.310	3	10.689
41	10.368	28	10.955	15	11.331	2	10.111
40	10.423	27	10.994	14	11.359	1	9.467
39	10.478	26	11.032	13	11.388	0	8.229
38	10.533	25	11.070	12	11.416		

Older Age Fifty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
51	9.374	38	10.344	25	10.845	12	11.181
50	9.481	37	10.397	24	10.878	11	11.207
49	9.589	36	10.450	23	10.911	10	11.222
48	9.696	35	10.488	22	10.944	9	11.226
47	9.804	34	10.526	21	10.977	8	11.219
46	9.911	33	10.565	20	10.997	7	11.198
45	9.966	32	10.603	19	11.017	6	11.161
44	10.021	31	10.641	18	11.037	5	11.028
43	10.076	30	10.675	17	11.057	4	10.785
42	10.131	29	10.709	16	11.077	3	10.472
41	10.186	28	10.744	15	11.103	2	9.918
40	10.239	27	10.778	14	11.129	1	9.301
39	10.292	26	10.812	13	11.155	0	8.053

Older Age Fifty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
52	9.082	39	10.098	26	10.581	13	10.915
51	9.199	38	10.147	25	10.616	12	10.938
50	9.316	37	10.197	24	10.650	11	10.946
49	9.432	36	10.237	23	10.685	10	10.954
48	9.549	35	10.277	22	10.719	9	10.963
47	9.666	34	10.318	21	10.740	8	10.971
46	9.723	33	10.358	20	10.760	7	10.979
45	9.779	32	10.398	19	10.781	6	10.902
44	9.836	31	10.428	18	10.801	5	10.779
43	9.892	30	10.453	17	10.822	4	10.550
42	9.949	29	10.487	16	10.845	3	10.254
41	9.999	28	10.517	15	10.868	2	9.725
40	10.048	27	10.547	14	10.892	1	9.089
						0	7.877

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fifty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
53	8.786	42	9.757	31	10.199	20	10.520	9	10.736
52	8.911	41	9.803	30	10.226	19	10.542	8	10.754
51	9.035	40	9.848	29	10.252	18	10.564	7	10.712
50	9.160	39	9.894	28	10.279	17	10.584	6	10.644
49	9.284	38	9.939	27	10.314	16	10.604	5	10.530
48	9.409	37	9.980	26	10.349	15	10.625	4	10.315
47	9.470	36	10.022	25	10.384	14	10.645	3	10.036
46	9.530	35	10.063	24	10.419	13	10.665	2	9.490
45	9.591	34	10.105	23	10.454	12	10.683	1	8.877
44	9.651	33	10.146	22	10.476	11	10.701	0	7.700
43	9.712	32	10.173	21	10.498	10	10.718		

Older Age Fifty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
54	8.485	43	9.509	32	9.937	21	10.252	10	10.476
53	8.615	42	9.551	31	9.963	20	10.276	9	10.498
52	8.745	41	9.592	30	9.988	19	10.299	8	10.480
51	8.875	40	9.634	29	10.014	18	10.317	7	10.445
50	9.005	39	9.675	28	10.048	17	10.334	6	10.385
49	9.135	38	9.717	27	10.081	16	10.352	5	10.281
48	9.202	37	9.759	26	10.115	15	10.369	4	10.080
47	9.268	36	9.802	25	10.148	14	10.387	3	9.780
46	9.335	35	9.844	24	10.182	13	10.409	2	9.254
45	9.401	34	9.886	23	10.205	12	10.431	1	8.665
44	9.468	33	9.912	22	10.229	11	10.454	0	7.524

Older Age Fifty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
55	8.174	43	9.292	31	9.723	19	10.040	7	10.177
54	8.308	42	9.331	30	9.750	18	10.056	6	10.127
53	8.442	41	9.369	29	9.780	17	10.071	5	10.032
52	8.576	40	9.408	28	9.810	16	10.087	4	9.814
51	8.710	39	9.450	27	9.841	15	10.102	3	9.524
50	8.844	38	9.491	26	9.871	14	10.125	2	9.019
49	8.918	37	9.533	25	9.901	13	10.148	1	8.453
48	8.992	36	9.574	24	9.926	12	10.170	0	7.348
47	9.067	35	9.616	23	9.951	11	10.193		
46	9.141	34	9.643	22	9.975	10	10.216		
45	9.215	33	9.670	21	10.000	9	10.221		
44	9.254	32	9.696	20	10.025	8	10.206		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
56	7.856	41	9.143	26	9.613	11	9.919
55	7.993	40	9.182	25	9.639	10	9.943
54	8.129	39	9.221	24	9.665	9	9.945
53	8.266	38	9.260	23	9.691	8	9.931
52	8.402	37	9.299	22	9.717	7	9.910
51	8.539	36	9.338	21	9.743	6	9.868
50	8.622	35	9.367	20	9.758	5	9.763
49	8.705	34	9.395	19	9.773	4	9.547
48	8.787	33	9.424	18	9.787	3	9.269
47	8.870	32	9.452	17	9.802	2	8.783
46	8.953	31	9.481	16	9.817	1	8.241
45	8.991	30	9.507	15	9.837	0	7.157
44	9.029	29	9.534	14	9.858		
43	9.067	28	9.560	13	9.878		
42	9.105	27	9.587	12	9.899		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
57	7.531	42	8.875	27	9.316	12	9.618
56	7.670	41	8.911	26	9.343	11	9.623
55	7.810	40	8.947	25	9.370	10	9.628
54	7.949	39	8.982	24	9.397	9	9.633
53	8.089	38	9.018	23	9.424	8	9.638
52	8.228	37	9.054	22	9.451	7	9.643
51	8.318	36	9.084	21	9.466	6	9.607
50	8.409	35	9.114	20	9.482	5	9.494
49	8.499	34	9.143	19	9.497	4	9.281
48	8.590	33	9.173	18	9.513	3	9.013
47	8.680	32	9.203	17	9.528	2	8.548
46	8.719	31	9.226	16	9.546	1	8.026
45	8.758	30	9.248	15	9.564	0	6.965
44	8.797	29	9.271	14	9.582		
43	8.836	28	9.293	13	9.600		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 4½ per Cent.)

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.210	43	8.611	28	9.021	13	9.317
57	7.352	42	8.643	27	9.048	12	9.330
56	7.493	41	8.674	26	9.076	11	9.343
55	7.635	40	8.706	25	9.103	10	9.357
54	7.776	39	8.737	24	9.131	9	9.370
53	7.918	38	8.769	23	9.158	8	9.383
52	8.015	37	8.800	22	9.174	7	9.393
51	8.112	36	8.831	21	9.191	6	9.345
50	8.208	35	8.861	20	9.207	5	9.224
49	8.305	34	8.892	19	9.224	4	9.014
48	8.402	33	8.923	18	9.240	3	8.757
47	8.444	32	8.943	17	9.255	2	8.328
46	8.486	31	8.962	16	9.271	1	7.811
45	8.527	30	8.982	15	9.286	0	6.774
44	8.569	29	9.001	14	9.302		

Older Age Fifty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
59	6.912	44	8.358	29	8.745	14	9.029
58	7.053	43	8.386	28	8.771	13	9.046
57	7.194	42	8.414	27	8.798	12	9.063
56	7.336	41	8.441	26	8.824	11	9.081
55	7.477	40	8.469	25	8.851	10	9.098
54	7.618	39	8.497	24	8.877	9	9.115
53	7.719	38	8.528	23	8.894	8	9.145
52	7.821	37	8.559	22	8.912	7	9.143
51	7.922	36	8.591	21	8.929	6	9.084
50	8.024	35	8.622	20	8.947	5	8.955
49	8.125	34	8.653	19	8.964	4	8.748
48	8.172	33	8.671	18	8.977	3	8.535
47	8.218	32	8.690	17	8.990	2	8.108
46	8.265	31	8.708	16	9.003	1	7.597
45	8.311	30	8.727	15	9.016	0	6.582

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fifty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
56	7.856	41	9.143	26	9.613	11	9.919
55	7.993	40	9.182	25	9.639	10	9.943
54	8.129	39	9.221	24	9.665	9	9.945
53	8.266	38	9.260	23	9.691	8	9.931
52	8.402	37	9.299	22	9.717	7	9.910
51	8.539	36	9.338	21	9.743	6	9.868
50	8.622	35	9.367	20	9.758	5	9.763
49	8.705	34	9.395	19	9.773	4	9.547
48	8.787	33	9.424	18	9.787	3	9.269
47	8.870	32	9.452	17	9.802	2	8.783
46	8.953	31	9.481	16	9.817	1	8.241
45	8.991	30	9.507	15	9.837	0	7.157
44	9.029	29	9.534	14	9.858		
43	9.067	28	9.560	13	9.878		
42	9.105	27	9.587	12	9.899		

Older Age Fifty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
57	7.531	42	8.875	27	9.316	12	9.618
56	7.670	41	8.911	26	9.343	11	9.623
55	7.810	40	8.947	25	9.370	10	9.628
54	7.949	39	8.982	24	9.397	9	9.633
53	8.089	38	9.018	23	9.424	8	9.638
52	8.228	37	9.054	22	9.451	7	9.643
51	8.318	36	9.084	21	9.466	6	9.607
50	8.409	35	9.114	20	9.482	5	9.494
49	8.499	34	9.143	19	9.497	4	9.281
48	8.590	33	9.173	18	9.513	3	9.013
47	8.680	32	9.203	17	9.528	2	8.548
46	8.719	31	9.226	16	9.546	1	8.026
45	8.758	30	9.248	15	9.564	0	6.965
44	8.797	29	9.271	14	9.582		
43	8.836	28	9.293	13	9.600		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Fifty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
58	7.210	43	8.611	28	9.021	13	9.317
57	7.352	42	8.643	27	9.048	12	9.330
56	7.493	41	8.674	26	9.076	11	9.343
55	7.635	40	8.706	25	9.103	10	9.357
54	7.776	39	8.737	24	9.131	9	9.370
53	7.918	38	8.769	23	9.158	8	9.383
52	8.015	37	8.800	22	9.174	7	9.393
51	8.112	36	8.831	21	9.191	6	9.345
50	8.208	35	8.861	20	9.207	5	9.224
49	8.305	34	8.892	19	9.224	4	9.014
48	8.402	33	8.923	18	9.240	3	8.757
47	8.444	32	8.943	17	9.255	2	8.328
46	8.486	31	8.962	16	9.271	1	7.811
45	8.527	30	8.982	15	9.286	0	6.774
44	8.569	29	9.001	14	9.302		

Older Age Fifty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
59	6.912	44	8.358	29	8.745	14	9.029
58	7.053	43	8.386	28	8.771	13	9.046
57	7.194	42	8.414	27	8.798	12	9.063
56	7.336	41	8.441	26	8.824	11	9.081
55	7.477	40	8.469	25	8.851	10	9.098
54	7.618	39	8.497	24	8.877	9	9.115
53	7.719	38	8.528	23	8.894	8	9.145
52	7.821	37	8.559	22	8.912	7	9.143
51	7.922	36	8.591	21	8.929	6	9.084
50	8.024	35	8.622	20	8.947	5	8.955
49	8.125	34	8.653	19	8.964	4	8.748
48	8.172	33	8.671	18	8.977	3	8.535
47	8.218	32	8.690	17	8.990	2	8.108
46	8.265	31	8.708	16	9.003	1	7.597
45	8.311	30	8.727	15	9.016	0	6.582

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Sixty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
60	6.650	44	8.148	28	8.545	12	8.817
59	6.787	43	8.173	27	8.568	11	8.834
58	6.923	42	8.198	26	8.592	10	8.852
57	7.060	41	8.223	25	8.615	9	8.884
56	7.196	40	8.248	24	8.634	8	8.907
55	7.333	39	8.279	23	8.653	7	8.894
54	7.438	38	8.309	22	8.671	6	8.822
53	7.541	37	8.340	21	8.690	5	8.686
52	7.649	36	8.370	20	8.709	4	8.526
51	7.754	35	8.401	19	8.720	3	8.313
50	7.859	34	8.420	18	8.731	2	7.689
49	7.912	33	8.440	17	8.742	1	7.382
48	7.965	32	8.459	16	8.753	0	6.391
47	8.017	31	8.479	15	8.764		
46	8.070	30	8.498	14	8.782		
45	8.123	29	8.521	13	8.799		

Older Age Sixty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
61	6.439	45	7.939	29	8.322	13	8.582
60	6.566	44	7.963	28	8.343	12	8.598
59	6.693	43	7.987	27	8.363	11	8.614
58	6.820	42	8.011	26	8.383	10	8.623
57	6.947	41	8.035	25	8.403	9	8.654
56	7.074	40	8.063	24	8.423	8	8.669
55	7.182	39	8.092	23	8.443	7	8.644
54	7.290	38	8.120	22	8.463	6	8.561
53	7.397	37	8.149	21	8.483	5	8.460
52	7.505	36	8.177	20	8.493	4	8.304
51	7.613	35	8.198	19	8.504	3	8.092
50	7.673	34	8.219	18	8.514	2	7.669
49	7.734	33	8.240	17	8.525	1	7.167
48	7.794	32	8.261	16	8.535	0	6.232
47	7.855	31	8.282	15	8.551		
46	7.915	30	8.302	14	8.567		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Sixty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
62	6.238	42	7.830	22	8.258	2	7.449
61	6.353	41	7.855	21	8.269	1	6.975
60	6.469	40	7.881	20	8.280	0	6.073
59	6.584	39	7.906	19	8.291		
58	6.700	38	7.932	18	8.302		
57	6.815	37	7.957	17	8.313		
56	6.926	36	7.979	16	8.327		
55	7.037	35	8.001	15	8.340		
54	7.148	34	8.024	14	8.354		
53	7.259	33	8.046	13	8.367		
52	7.370	32	8.068	12	8.381		
51	7.437	31	8.085	11	8.384		
50	7.505	30	8.102	10	8.386		
49	7.572	29	8.119	9	8.389		
48	7.640	28	8.136	8	8.391		
47	7.707	27	8.153	7	8.394		
46	7.732	26	8.174	6	8.326		
45	7.756	25	8.195	5	8.235		
44	7.781	24	8.216	4	8.082		
43	7.805	23	8.237	3	7.870		

Older Age Sixty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
63	6.035	43	7.624	23	8.028	3	7.648
62	6.139	42	7.646	22	8.040	2	7.233
61	6.243	41	7.668	21	8.052	1	6.783
60	6.348	40	7.689	20	8.063	0	5.913
59	6.452	39	7.711	19	8.075		
58	6.556	38	7.733	18	8.087		
57	6.670	37	7.756	17	8.098		
56	6.784	36	7.779	16	8.110		
55	6.897	35	7.803	15	8.121		
54	7.011	34	7.826	14	8.133		
53	7.125	33	7.849	13	8.144		
52	7.198	32	7.863	12	8.154		
51	7.271	31	7.877	11	8.164		
50	7.345	30	7.892	10	8.173		
49	7.418	29	7.906	9	8.183		
48	7.491	28	7.920	8	8.193		
47	7.518	27	7.942	7	8.147		
46	7.544	26	7.963	6	8.091		
45	7.571	25	7.985	5	8.009		
44	7.597	24	8.006	4	7.860		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Sixty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
64	5.818	44	7.407	24	7.785	4	7.638
63	5.914	43	7.425	23	7.798	3	7.408
62	6.011	42	7.443	22	7.811	2	7.016
61	6.107	41	7.461	21	7.823	1	6.590
60	6.204	40	7.479	20	7.836	0	5.754
59	6.300	39	7.497	19	7.849		
58	6.414	38	7.521	18	7.858		
57	6.527	37	7.544	17	7.868		
56	6.641	36	7.568	16	7.877		
55	6.754	35	7.591	15	7.887		
54	6.868	34	7.615	14	7.896		
53	6.945	33	7.628	13	7.909		
52	7.022	32	7.641	12	7.922		
51	7.100	31	7.655	11	7.936		
50	7.177	30	7.668	10	7.949		
49	7.251	29	7.681	9	7.962		
48	7.285	28	7.702	8	7.934		
47	7.315	27	7.723	7	7.901		
46	7.346	26	7.743	6	7.856		
45	7.376	25	7.764	5	7.784		

Older Age Sixty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
65	5.594	45	7.182	25	7.532	5	7.558
64	5.686	44	7.197	24	7.546	4	7.379
63	5.779	43	7.212	23	7.560	3	7.167
62	5.871	42	7.227	22	7.574	2	6.800
61	5.964	41	2.242	21	7.588	1	6.398
60	6.056	40	7.257	20	7.602	0	5.595
59	6.165	39	7.280	19	7.610		
58	6.275	38	7.303	18	7.617		
57	6.384	37	7.326	17	7.625		
56	6.494	36	7.349	16	7.632		
55	6.603	35	7.372	15	7.640		
54	6.683	34	7.386	14	7.654		
53	6.763	33	7.400	13	7.668		
52	6.844	32	7.414	12	7.681		
51	6.924	31	7.428	11	7.695		
50	7.004	30	7.442	10	7.709		
49	7.040	29	7.460	9	7.692		
48	7.075	28	7.478	8	7.676		
47	7.111	27	7.496	7	7.654		
46	7.146	26	7.514	6	7.621		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Sixty-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
66	5.357	46	6.944	26	7.269	6	7.386
65	5.451	45	6.958	25	7.284	5	7.282
64	5.545	44	6.972	24	7.299	4	7.120
63	5.640	43	6.985	23	7.313	3	6.927
62	5.734	42	6.999	22	7.328	2	6.583
61	5.828	41	7.013	21	7.343	1	6.206
60	5.928	40	7.034	20	7.350	0	5.399
59	6.028	39	7.055	19	7.357		
58	6.127	38	7.075	18	7.364		
57	6.227	37	7.096	17	7.371		
56	6.327	36	7.117	16	7.378		
55	6.409	35	7.132	15	7.390		
54	6.491	34	7.147	14	7.402		
53	6.573	33	7.163	13	7.415		
52	6.655	32	7.178	12	7.427		
51	6.737	31	7.193	11	7.439		
50	6.778	30	7.208	10	7.428		
49	6.820	29	7.223	9	7.422		
48	6.861	28	7.239	8	7.417		
47	6.903	27	7.254	7	7.408		

Older Age Sixty-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
67	5.106	47	6.693	27	6.992	7	7.161
66	5.204	46	6.707	26	7.008	6	7.095
65	5.302	45	6.720	25	7.024	5	7.006
64	5.401	44	6.734	24	7.039	4	6.861
63	5.499	43	6.747	23	7.055	3	6.686
62	5.597	42	6.761	22	7.071	2	6.367
61	5.685	41	6.779	21	7.078	1	5.967
60	6.774	40	6.797	20	7.085	0	5.204
59	5.862	39	6.814	19	7.093		
58	5.951	38	6.832	18	7.100		
57	6.039	37	6.850	17	7.108		
56	6.123	36	6.866	16	7.117		
55	6.207	35	6.882	15	7.127		
54	6.291	34	6.899	14	7.137		
53	6.375	33	6.915	13	7.148		
52	6.459	32	6.931	12	7.158		
51	6.506	31	6.943	11	7.159		
50	6.553	30	6.955	10	7.159		
49	6.599	29	6.968	9	7.160		
48	6.646	28	6.980	8	7.160		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Sixty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
68	4.843	48	6.427	28	6.706	8	6.900
67	4.946	47	6.442	27	6.722	7	6.862
66	5.049	46	6.457	26	6.738	6	6.803
65	5.153	45	6.471	25	6.754	5	6.729
64	5.256	44	6.486	24	6.770	4	6.602
63	5.359	43	6.501	23	6.786	3	6.446
62	5.436	42	6.515	22	6.794	2	6.105
61	5.513	41	6.530	21	6.802	1	5.729
60	5.591	40	6.544	20	6.810	0	5.068
59	5.668	39	6.559	19	6.818		
58	5.745	38	6.573	18	6.826		
57	5.831	37	6.590	17	6.834		
56	5.916	36	6.607	16	6.842		
55	6.002	35	6.623	15	6.851		
54	6.087	34	6.640	14	6.859		
53	6.173	33	6.657	13	6.867		
52	6.224	32	6.667	12	6.874		
51	6.275	31	6.677	11	6.880		
50	6.325	30	6.686	10	6.887		
49	6.376	29	6.696	9	6.893		

Older Age Sixty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
69	4.566	49	6.143	29	6.414	9	6.612
68	4.674	48	6.160	28	6.429	8	6.602
67	4.782	47	6.178	27	6.444	7	6.563
66	4.890	46	6.195	26	6.460	6	6.512
65	4.998	45	6.213	25	6.475	5	6.453
64	5.106	44	6.230	24	6.490	4	6.343
63	5.175	43	6.241	23	6.499	3	6.169
62	5.244	42	6.252	22	6.507	2	5.842
61	5.314	41	6.263	21	6.516	1	5.490
60	5.383	40	6.274	20	6 524	0	4.813
59	5.452	39	6.285	19	6.533		
58	5.537	38	6.302	18	6.539		
57	5.622	37	6.319	17	6.545		
56	5.706	36	6.336	16	6.552		
55	5.791	35	6.353	15	6.558		
54	5.876	34	6.370	14	6.564		
53	5.929	33	6.379	13	6.574		
52	5.983	32	6.388	12	6.583		
51	6.036	31	6.396	11	6.593		
50	6.090	30	6.405	10	6.602		

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 4½ per Cent.)

Older Age Seventy Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
70	4.278	50	5.845	30	6.118	10	6.303
69	4.391	49	5.866	29	6.131	9	6.324
68	4.504	48	5.887	28	6.144	8	6.304
67	4.618	47	5.907	27	6.157	7	6.264
66	4.731	46	5.928	26	6.170	6	6.220
65	4.844	45	5.949	25	6.183	5	6.177
64	4.908	44	5.957	24	6.192	4	6.067
63	4.973	43	5.965	23	6.202	3	5.892
62	5.037	42	5.974	22	6.211	2	5.580
61	5.102	41	5.982	21	6.221	1	5.252
60	5.166	40	5.990	20	6.230	0	4.617
59	5.246	39	6.006	19	6.235		
58	5.327	38	6.023	18	6.240		
57	5.407	37	6.039	17	6.244		
56	5.488	36	6.056	16	6.249		
55	5.568	35	6.072	15	6.254		
54	5.623	34	6.081	14	6.264		
53	5.679	33	6.090	13	6.274		
52	5.734	32	6.100	12	6.283		
51	5.790	31	6.109	11	6.293		

Older Age Seventy-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
71	3.970	51	5.528	31	5.811	11	5.977
70	4.089	50	5.553	30	5.822	10	6.037
69	4.208	49	5.578	29	5.832	9	6.036
68	4.328	48	5.604	28	5.843	8	6.006
67	4.447	47	5.629	27	5.853	7	5.965
66	4.566	46	5.654	26	5.864	6	5.929
65	4.631	45	5.661	25	5.874	5	5.916
64	4.696	44	5.668	24	5.884	4	5.791
63	4.760	43	5.674	23	5.894	3	5.616
62	4.825	42	5.681	22	5.904	2	5.317
61	4.890	41	5.688	21	5.914	1	5.013
60	4.962	40	5.702	20	5.918	0	4.429
59	5.033	39	5.717	19	5.922		
58	5.105	38	5.731	18	5.926		
57	5.176	37	5.746	17	5.930		
56	5.248	36	5.760	16	5.934		
55	5.304	35	5.770	15	5.943		
54	5.360	34	5.780	14	5.951		
53	5.416	33	5.791	13	5.960		
52	5.472	32	5.801	12	5.968		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Seventy-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
72	3.684	52	5.227	32	5.518	12	5.669
71	3.806	51	5.256	31	5.526	11	5.668
70	3.928	50	5.285	30	5.534	10	5.668
69	4.051	49	5.314	29	5.543	9	5.667
68	4.173	48	5.343	28	5.551	8	5.667
67	4.295	47	5.372	27	5.559	7	5.666
66	4.362	46	5.378	26	5.570	6	5.689
65	4.429	45	5.384	25	5.580	5	5.654
64	4.497	44	5.391	24	5.591	4	5.516
63	4.564	43	5.397	23	5.601	3	5.339
62	4.631	42	5.403	22	5.612	2	5.055
61	4.693	41	5.415	21	5.616	1	4.815
60	4.754	40	5.427	20	5.621	0	4.241
59	4.816	39	5.440	19	5.625		
58	4.877	38	5.452	18	5.630		
57	4.939	37	5.464	17	5.634		
56	4.997	36	5.475	16	5.641		
55	5.054	35	5.486	15	5.648		
54	5.112	34	5.496	14	5.655		
53	5.169	33	5.507	13	5.662		

Older Age Seventy-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
73	3.433	53	4.952	33	5.252	13	5.389
72	3.554	52	4.984	32	5.258	12	5.393
71	3.676	51	5.017	31	5.264	11	5.397
70	3.797	50	5.049	30	5.271	10	5.402
69	3.919	49	5.082	29	5.277	9	5.406
68	4.040	48	5.114	28	5.283	8	5.410
67	4.111	47	5.121	27	5.294	7	5.448
66	4.182	46	5.128	26	5.305	6	5.449
65	4.253	45	5.134	25	5.316	5	5.393
64	4.324	44	5.141	24	5.327	4	5.240
63	4.395	43	5.148	23	5.338	3	5.062
62	4.447	42	5.157	22	5.343	2	4.863
61	4.500	41	5.167	21	5.348	1	4.617
60	4.552	40	5.176	20	5.352	0	4.054
59	4.605	39	5.186	19	5.357		
58	4.657	38	5.195	18	5.362		
57	4.716	37	5.206	17	5.367		
56	4.775	36	5.218	16	5.373		
55	4.834	35	5.229	15	5.378		
54	4.893	34	5.241	14	5.384		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Seventy-Four Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
3.221	54	4.705	34	5.013	14	5.140
3.337	53	4.740	33	5.019	13	5.147
3.454	52	4.775	32	5.024	12	5.153
3.570	51	4.809	31	5.030	11	5.160
3.687	50	4.844	30	5.035	10	5.166
3.803	49	4.879	29	5.041	9	5.173
3.878	48	4.889	28	5.052	8	5.209
3.954	47	4.896	27	5.062	7	5.230
4.029	46	4.905	26	5.073	6	5.209
4.105	45	4.913	25	5.083	5	5.131
4.180	44	4.922	24	5.094	4	4.964
4.226	43	4.929	23	5.099	3	4.876
4.272	42	4.935	22	5.104	2	4.672
4.318	41	4.942	21	5.110	1	4.419
4.364	40	4.948	20	5.115	0	3.866
4.410	39	4.955	19	5.120		
4.469	38	4.967	18	5.124		
4.528	37	4.978	17	5.128		
4.587	36	4.990	16	5.132		
4.646	35	5.001	15	5.136		

Older Age Seventy-Five Years.

Value.	Age.	Value.	Age.	Value.	Age.	Value.
3.066	55	4.497	35	4.817	15	4.937
3.172	54	4.534	34	4.823	14	4.944
3.277	53	4.571	33	4.829	13	4.951
3.383	52	4.607	32	4.835	12	4.958
3.488	51	4.644	31	4.841	11	4.965
3.594	50	4.681	30	4.847	10	4.972
3.675	49	4.692	29	4.856	9	4.979
3.756	48	4.704	28	4.865	8	5.009
3.838	47	4.715	27	4.874	7	5.013
3.919	46	4.727	26	4.883	6	4.969
4.000	45	4.738	25	4.892	5	4.870
4.043	44	4.742	24	4.898	4	4.778
4.085	43	4.746	23	4.904	3	4.689
4.128	42	4.751	22	4.910	2	4.480
4.170	41	4.755	21	4.916	1	4.221
4.213	40	4.759	20	4.922	0	3.678
4.270	39	4.771	19	4.925		
4.327	38	4.782	18	4.928		
4.383	37	4.794	17	4.931		
4.410	36	4.805	16	4.934		

Value of £1 per Annum during the joint Continuance of Two Lives (Carlisle 4½ per Cent.)

Older Age Seventy-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
76	2.917	56	4.291	36	4.624	16	4.740
75	3.009	55	4.329	35	4.631	15	4.746
74	3.101	54	4.367	34	4.637	14	4.752
73	3.194	53	4.406	33	4.644	13	4.758
72	3.286	52	4.444	32	4.650	12	4.764
71	3.378	51	4.482	31	4.657	11	4.770
70	3.466	50	4.497	30	4.664	10	4.779
69	3.555	49	4.512	29	4.672	9	4.784
68	3.643	48	4.526	28	4.679	8	4.808
67	3.732	47	4.541	27	4.687	7	4.795
66	3.820	46	4.556	26	4.694	6	4.729
65	3.863	45	4.559	25	4.701	5	4.681
64	3.906	44	4.562	24	4.708	4	4.592
63	3.950	43	4.565	23	4.714	3	4.503
62	3.993	42	4.568	22	4.721	2	4.289
61	4.036	41	4.571	21	4.728	1	4.023
60	4.087	40	4.582	20	4.730	0	3.542
59	4.138	39	4.592	19	4.733		
58	4.189	38	4.603	18	4.735		
57	4.240	37	4.613	17	4.738		

Older Age Seventy-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
77	2.788	57	4.096	37	4.444	17	4.558
76	2.867	56	4.136	36	4.451	16	4.563
75	2.945	55	4.176	35	4.459	15	4.568
74	3.024	54	4.217	34	4.466	14	4.574
73	3.102	53	4.257	33	4.474	13	4.579
72	3.181	52	4.297	32	4.481	12	4.584
71	3.274	51	4.315	31	4.487	11	4.583
70	3.367	50	4.333	30	4.492	10	4.581
69	3.461	49	4.352	29	4.498	9	4.580
68	3.554	48	4.370	28	4.503	8	4.578
67	3.647	47	4.388	27	4.509	7	4.577
66	3.693	46	4.390	26	4.516	6	4.534
65	3.739	45	4.392	25	4.524	5	4.491
64	3.784	44	4.395	24	4.531	4	4.406
63	3.830	43	4.397	23	4.539	3	4.316
62	3.876	42	4.399	22	4.546	2	4.097
61	3.920	41	4.408	21	4.548	1	3.862
60	3.964	40	4.417	20	4.551	0	3.407
59	4.008	39	4.426	19	4.553		
58	4.052	38	4.435	18	4.556		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Seventy-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
78	2.657	58	3.897	38	4.260	18	4.374
77	2.725	57	3.939	37	4.268	17	4.378
76	2.793	56	3.982	36	4.276	16	4.382
75	2.861	55	4.024	35	4.284	15	4.385
74	2.929	54	4.067	34	4.292	14	4.389
73	2.997	53	4.109	33	4.300	13	4.393
72	3.091	52	4.130	32	4.304	12	4.396
71	3.186	51	4.151	31	4.308	11	4.399
70	3.280	50	4.171	30	4.312	10	4.401
69	3.375	49	4.192	29	4.316	9	4.404
68	3.469	48	4.213	28	4.320	8	4.407
67	3.518	47	4.216	27	4.328	7	4.378
66	3.567	46	4.218	26	4.336	6	4.339
65	3.616	45	4.221	25	4.344	5	4.302
64	3.665	44	4.223	24	4.352	4	4.220
63	3.714	43	4.226	23	4.360	3	4.130
62	3.751	42	4.233	22	4.363	2	3.922
61	3.787	41	4.240	21	4.366	1	3.701
60	3.824	40	4.246	20	4.368	0	3.271
59	3.860	39	4.253	19	4.371		

Older Age Seventy-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
79	2.496	59	3.683	39	4.051	19	4.165
78	2.559	58	3.726	38	4.060	18	4.168
77	2.622	57	3.769	37	4.068	17	4.170
76	2.686	56	3.811	36	4.077	16	4.173
75	2.749	55	3.854	35	4.085	15	4.175
74	2.812	54	3.897	34	4.094	14	4.178
73	2.903	53	3.920	33	4.097	13	4.183
72	2.993	52	3.942	32	4.100	12	4.187
71	3.084	51	3.965	31	4.104	11	4.192
70	3.174	50	3.987	30	4.107	10	4.196
69	3.265	49	4.010	29	4.110	9	4.201
68	3.318	48	4.014	28	4.118	8	4.205
67	3.370	47	4.018	27	4.126	7	4.180
66	3.423	46	4.021	26	4.133	6	4.143
65	3.475	45	4.025	25	4.141	5	4.112
64	3.528	44	4.029	24	4.149	4	4.034
63	3.559	43	4.033	23	4.152	3	3.943
62	3.590	42	4.038	22	4.155	2	3.748
61	3.621	41	4.042	21	4.159	1	3.541
60	3.652	40	4.047	20	4.162	0	3.136

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Eighty Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
80	2.356	59	3.534	38	3.877	17	3.977
79	2.417	58	3.575	37	3.885	16	3.979
78	2.479	57	3.617	36	3.894	15	3.981
77	2.540	56	3.658	35	3.902	14	3.986
76	2.602	55	3.699	34	3.906	13	3.991
75	2.663	54	3.723	33	3.909	12	3.996
74	2.744	53	3.747	32	3.913	11	4.001
73	2.826	52	3.771	31	3.916	10	4.006
72	2.907	51	3.795	30	3.920	9	4.002
71	2.989	50	3.819	29	3.927	8	4.003
70	3.070	49	3.825	28	3.933	7	3.981
69	3.127	48	3.830	27	3.940	6	3.948
68	3.184	47	3.836	26	3.946	5	3.923
67	3.242	46	3.841	25	3.953	4	3.844
66	3.299	45	3.847	24	3.957	3	3.755
65	3.356	44	3.850	23	3.961	2	3.573
64	3.383	43	3.852	22	3.964	1	3.380
63	3.411	42	3.855	21	3.968	0	3.000
62	3.438	41	3.857	20	3.972		
61	3.466	40	3.860	19	3.974		
60	3.493	39	3.868	18	3.976		

Older Age Eighty-One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
81	2.192	61	3.300	41	3.653	21	3.759
80	2.254	60	3.336	40	3.661	20	3.760
79	2.316	59	3.372	39	3.668	19	3.762
78	2.379	58	3.409	38	3.676	18	3.763
77	2.441	57	3.445	37	3.683	17	3.765
76	2.503	56	3.481	36	3.691	16	3.766
75	2.573	55	3.506	35	3.695	15	3.770
74	2.643	54	3.531	34	3.699	14	3.775
73	2.712	53	3.556	33	3.704	13	3.779
72	2.782	52	3.581	32	3.708	12	3.784
71	2.852	51	3.606	31	3.712	11	3.788
70	2.914	50	3.614	30	3.717	10	3.806
69	2.977	49	3.622	29	3.722	9	3.804
68	3.039	48	3.630	28	3.728	8	3.801
67	3.102	47	3.638	27	3.733	7	3.783
66	3.164	46	3.646	26	3.738	6	3.753
65	3.191	45	3.647	25	3.742	5	3.727
64	3.218	44	3.649	24	3.746	4	3.654
63	3.246	43	3.650	23	3.751	3	3.568
62	3.273	42	3.652	22	3.755	2	3.399
						1	3.219

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Eighty-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
82	2.053	62	3.129	42	3.469	22	3.567
81	2.116	61	3.159	41	3.475	21	3.568
80	2.179	60	3.190	40	3.482	20	3.570
79	2.241	59	3.220	39	3.488	19	3.571
78	2.304	58	3.251	38	3.495	18	3.573
77	2.367	57	3.281	37	3.501	17	3.574
76	2.425	56	3.307	36	3.506	16	3.578
75	2.483	55	3.334	35	3.510	15	3.581
74	2.540	54	3.360	34	3.515	14	3.585
73	2.598	53	3.387	33	3.519	13	3.588
72	2.656	52	3.413	32	3.524	12	3.592
71	2.722	51	3.423	31	3.528	11	3.590
70	2.788	50	3.434	30	3.532	10	3.589
69	2.854	49	3.444	29	3.535	9	3.587
68	2.920	48	3.455	28	3.539	8	3.586
67	2.986	47	3.465	27	3.543	7	3.584
66	3.015	46	3.466	26	3.548	6	3.562
65	3.043	45	3.467	25	3.553	5	3.532
64	3.072	44	3.467	24	3.557	4	3.464
63	3.100	43	3.468	23	3.562	3	3.380
						2	3.224

Older Age Eighty-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
83	1.905	63	2.953	43	3.280	23	3.369
82	1.969	62	2.978	42	3.285	22	3.370
81	2.033	61	3.002	41	3.290	21	3.372
80	2.096	60	3.027	40	3.294	20	3.373
79	2.160	59	3.051	39	3.299	19	3.375
78	2.224	58	3.076	38	3.304	18	3.376
77	2.272	57	3.104	37	3.309	17	3.379
76	2.321	56	3.132	36	3.314	16	3.382
75	2.369	55	3.159	35	3.320	15	3.384
74	2.418	54	3.187	34	3.325	14	3.387
73	2.466	53	3.215	33	3.330	13	3.390
72	2.533	52	3.227	32	3.332	12	3.391
71	2.600	51	3.239	31	3.335	11	3.393
70	2.666	50	3.252	30	3.337	10	3.394
69	2.733	49	3.264	29	3.340	9	3.396
68	2.800	48	3.276	28	3.342	8	3.397
67	2.831	47	3.277	27	3.347	7	3.401
66	2.861	46	3.278	26	3.353	6	3.371
65	2.892	45	3.278	25	3.358	5	3.336
64	2.922	44	3.279	24	3.364	4	3.274
						3	3.193

Value of £1 per Annum during the joint Continuance of Two Lives. (Carlisle 4½ per Cent.)

Older Age Eighty-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
84	1.762	64	2.779	44	3.096	24	3.175
83	1.824	63	2.799	43	3.099	23	3.177
82	1.886	62	2.819	42	3.102	22	3.179
81	1.948	61	2.839	41	3.106	21	3.180
80	2.010	60	2.859	40	3.109	20	3.182
79	2.072	59	2.879	39	3.112	19	3.184
78	2.116	58	2.908	38	3.118	18	3.186
77	2.160	57	2.936	37	3.123	17	3.188
76	2.204	56	2.965	36	3.129	16	3.189
75	2.248	55	2.993	35	3.134	15	3.191
74	2.292	54	3.022	34	3.140	14	3.193
73	2.356	53	3.035	33	3.142	13	3.196
72	2.421	52	3.049	32	3.144	12	3.199
71	2.485	51	3.062	31	3.145	11	3.202
70	2.550	50	3.076	30	3.147	10	3.205
69	2.614	49	3.089	29	3.149	9	3.208
68	2.647	48	3.090	28	3.154	8	3.236
67	2.680	47	3.092	27	3.159	7	3.219
66	2.713	46	3.093	26	3.165	6	3.181
65	2.746	45	3.095	25	3.170	5	3.141
						4	3.084

Older Age Eighty-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
85	1.601	65	2.596	45	2.904	25	2.972
84	1.665	64	2.613	44	2.906	24	2.974
83	1.729	63	2.630	43	2.907	23	2.977
82	1.792	62	2.647	42	2.909	22	2.979
81	1.856	61	2.664	41	2.910	21	2.982
80	1.920	60	2.681	40	2.912	20	2.984
79	1.962	59	2.708	39	2.918	19	2.985
78	2.004	58	2.736	38	2.923	18	2.986
77	2.045	57	2.763	37	2.929	17	2.987
76	2.087	56	2.791	36	2.934	16	2.988
75	2.129	55	2.818	35	2.940	15	2.989
74	2.186	54	2.833	34	2.942	14	2.992
73	2.243	53	2.847	33	2.944	13	2.996
72	2.301	52	2.862	32	2.946	12	2.999
71	2.358	51	2.876	31	2.948	11	3.003
70	2.415	50	2.891	30	2.950	10	3.006
69	2.451	49	2.894	29	2.954	9	3.066
68	2.487	48	2.896	28	2.959	8	3.075
67	2.524	47	2.899	27	2.963	7	3.036
66	2.560	46	2.901	26	2.968	6	2.990
						5	2.945

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Eighty-Six Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
6	1.460	64	2.464	42	2.738	20	2.808
5	1.522	63	2.480	41	2.739	19	2.809
4	1.584	62	2.497	40	2.744	18	2.809
3	1.645	61	2.514	39	2.749	17	2.810
2	1.707	60	2.538	38	2.754	16	2.811
1	1.769	59	2.563	37	2.759	15	2.814
0	1.812	58	2.587	36	2.764	14	2.817
9	1.854	57	2.612	35	2.767	13	2.820
8	1.897	56	2.636	34	2.769	12	2.823
7	1.939	55	2.651	33	2.772	11	2.826
6	1.982	54	2.667	32	2.774	10	2.869
5	2.031	53	2.682	31	2.777	9	2.924
4	2.080	52	2.698	30	2.780	8	2.915
3	2.129	51	2.713	29	2.784	7	2.854
2	2.178	50	2.717	28	2.787	6	2.799
1	2.227	49	2.722	27	2.791		
0	2.268	48	2.726	26	2.794		
9	2.308	47	2.731	25	2.797		
8	2.349	46	2.735	24	2.799		
7	2.389	45	2.736	23	2.802		
6	2.430	44	2.737	22	2.804		
5	2.447	43	2.737	21	2.807		

Older Age Eighty-Seven Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
7	1.346	65	2.324	43	2.598	21	2.664
6	1.406	64	2.342	42	2.598	20	2.664
5	1.466	63	2.360	41	2.602	19	2.665
4	1.527	62	2.378	40	2.607	18	2.665
3	1.587	61	2.400	39	2.611	17	2.666
2	1.647	60	2.420	38	2.616	16	2.669
1	1.690	59	2.440	37	2.620	15	2.671
0	1.734	58	2.461	36	2.623	14	2.674
9	1.777	57	2.482	35	2.626	13	2.676
8	1.821	56	2.500	34	2.629	12	2.679
7	1.864	55	2.516	33	2.632	11	2.677
6	1.904	54	2.532	32	2.635	10	2.676
5	1.945	53	2.549	31	2.637	9	2.674
4	1.985	52	2.566	30	2.640	8	2.673
3	2.026	51	2.572	29	2.642	7	2.671
2	2.066	50	2.578	28	2.645		
1	2.110	49	2.585	27	2.647		
0	2.155	48	2.591	26	2.650		
9	2.199	47	2.597	25	2.653		
8	2.244	46	2.597	24	2.657		
7	2.288	45	2.597	23	2.660		
6	2.306	44	2.598	22	2.663		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Eighty-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
88	1.290	65	2.253	42	2.518	19	2.579
87	1.343	64	2.274	41	2.521	18	2.580
86	1.396	63	2.294	40	2.525	17	2.582
85	1.449	62	2.311	39	2.528	16	2.584
84	1.502	61	2.328	38	2.531	15	2.585
83	1.555	60	2.346	37	2.535	14	2.587
82	1.601	59	2.363	36	2.538	13	2.589
81	1.647	58	2.380	35	2.542	12	2.590
80	1.692	57	2.399	34	2.545	11	2.591
79	1.738	56	2.418	33	2.549	10	2.591
78	1.784	55	2.436	32	2.551	9	2.592
77	1.818	54	2.455	31	2.552	8	2.593
76	1.853	53	2.474	30	2.554		
75	1.887	52	2.482	29	2.555		
74	1.922	51	2.490	28	2.557		
73	1.956	50	2.498	27	2.561		
72	2.003	49	2.506	26	2.564		
71	2.050	48	2.514	25	2.568		
70	2.098	47	2.514	24	2.571		
69	2.145	46	2.514	23	2.575		
68	2.192	45	2.515	22	2.576		
67	2.212	44	2.515	21	2.577		
66	2.233	43	2.515	20	2.578		

Older Age Eighty-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
89	1.215	66	2.149	43	2.420	20	2.479
88	1.262	65	2.172	42	2.422	19	2.480
87	1.310	64	2.195	41	2.425	18	2.481
86	1.357	63	2.209	40	2.427	17	2.482
85	1.405	62	2.224	39	2.429	16	2.484
84	1.452	61	2.238	38	2.433	15	2.485
83	1.498	60	2.253	37	2.437	14	2.486
82	1.544	59	2.267	36	2.441	13	2.488
81	1.589	58	2.287	35	2.445	12	2.490
80	1.635	57	2.307	34	2.449	11	2.493
79	1.681	56	2.328	33	2.450	10	2.495
78	1.713	55	2.348	32	2.451	9	2.497
77	1.745	54	2.368	31	2.453		
76	1.778	53	2.377	30	2.454		
75	1.810	52	2.387	29	2.455		
74	1.842	51	2.396	28	2.459		
73	1.889	50	2.406	27	2.463		
72	1.937	49	2.415	26	2.466		
71	1.984	48	2.416	25	2.470		
70	2.032	47	2.416	24	2.474		
69	2.079	46	2.417	23	2.475		
68	2.102	45	2.417	22	2.476		
67	2.125	44	2.418	21	2.478		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Ninety Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
0	1.049	67	1.972	44	2.248	21	2.303
9	1.096	66	1.999	43	2.250	20	2.304
8	1.143	65	2.025	42	2.251	19	2.305
7	1.190	64	2.037	41	2.253	18	2.306
6	1.237	63	2.050	40	2.254	17	2.306
5	1.284	62	2.062	39	2.258	16	2.307
4	1.332	61	2.075	38	2.262	15	2.308
3	1.380	60	2.087	37	2.265	14	2.310
2	1.427	59	2.107	36	2.269	13	2.313
1	1.475	58	2.127	35	2.273	12	2.315
0	1.523	57	2.147	34	2.275	11	2.318
9	1.554	56	2.167	33	2.276	10	2,320
8	1.585	55	2.187	32	2.278		
7	1.617	54	2.197	31	2.279		
6	1.648	53	2.208	30	2.281		
5	1.679	52	2.218	29	2.284		
4	1.722	51	2.229	28	2.287		
3	1.765	50	2.239	27	2.291		
2	1.807	49	2.241	26	2.294		
1	1.850	48	2.242	25	2.297		
0	1.893	47	2.244	24	2.298		
9	1.919	46	2.245	23	2.300		
8	2.946	45	2.247	22	2.301		

Older Age Ninety-One Years.

e.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
1	1.018	68	1.938	45	2.245	22	2.300
0	1.058	67	1.971	44	2.246	21	2.302
9	1.097	66	2.004	43	2.246	20	2.302
8	1.137	65	2.017	42	2.247	19	2.303
7	1.176	64	2.031	41	2.247	18	2.303
6	1.216	63	2.044	40	2.251	17	2.304
5	1.266	62	2.058	39	2.255	16	2.304
4	1.316	61	2.071	38	2.260	15	2.306
3	1.367	60	2.090	37	2.264	14	2.309
2	1.417	59	2.110	36	2.268	13	2.311
1	1.467	58	2.129	35	2.270	12	2.314
0	1.502	57	2.149	34	2.272	11	2.316
9	1.537	56	2.168	33	2.274		
8	1.572	55	2.180	32	2.276		
7	1.607	54	2.192	31	2.278		
6	1.642	53	2.205	30	2.281		
5	1.682	52	2.217	29	2.283		
4	1.721	51	2.229	28	2.286		
3	1.761	50	2.232	27	2.288		
2	1.800	49	2.235	26	2.291		
1	1.840	48	2.239	25	2.293		
0	1.873	47	2.242	24	2.295		
9	1.906	46	2.245	23	2.298		

TABLE XXI.

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Ninety-Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
92	1.084	72	1.861	52	2.309	32	2.367
91	1.108	71	1.901	51	2.314	31	2.369
90	1.132	70	1.942	50	2.319	30	2.371
89	1.157	69	1.982	49	2.324	29	2.373
88	1.181	68	2.023	48	2.329	28	2.375
87	1.205	67	2.063	47	2.334	27	2.377
86	1.260	66	2.079	46	2.334	26	2.380
85	1.314	65	2.095	45	2.334	25	2.383
84	1.369	64	2.111	44	2.334	24	2.385
83	1.423	63	2.127	43	2.334	23	2.388
82	1.478	62	2.143	42	2.334	22	2.391
81	1.518	61	2.161	41	2.338	21	2.392
80	1.558	60	2.179	40	2.342	20	2.392
79	1.597	59	2.197	39	2.345	19	2.393
78	1.637	58	2.215	38	2.349	18	2.393
77	1.677	57	2.233	37	2.353	17	2.394
76	1.714	56	2.248	36	2.356	16	2.396
75	1.751	55	2.263	35	2.359	15	2.398
74	1.787	54	2.279	34	2.361	14	2.400
73	1.824	53	2.294	33	2.364	13	2.402
						12	2.404

Older Age Ninety-Three Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
93	1.186	73	1.898	53	2.402	33	2.470
92	1.195	72	1.945	52	2.409	32	2.471
91	1.204	71	1.992	51	2.416	31	2.473
90	1.214	70	2.039	50	2.424	30	2.474
89	1.223	69	2.086	49	2.431	29	2.476
88	1.232	68	2.133	48	2.438	28	2.477
87	1.285	67	2.153	47	2.438	27	2.481
86	1.337	66	2.172	46	2.437	26	2.484
85	1.390	65	2.192	45	2.437	25	2.488
84	1.442	64	2.211	44	2.436	24	2.491
83	1.495	63	2.231	43	2.436	23	2.495
82	1.541	62	2.247	42	2.439	22	2.496
81	1.588	61	2.263	41	2.443	21	2.497
80	1.634	60	2.278	40	2.446	20	2.497
79	1.681	59	2.294	39	2.450	19	2.498
78	1.727	58	2.310	38	2.453	18	2.499
77	1.761	57	2.328	37	2.456	17	2.501
76	1.795	56	2.347	36	2.460	16	2.502
75	1.830	55	2.365	35	2.463	15	2.504
74	1.864	54	2.384	34	2.467	14	2.505
						13	2.507

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Ninety-Four Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
94	1.258	74	1.905	54	2.445	34	2.520
93	1.252	73	1.955	53	2.454	33	2.521
92	1.246	72	2.005	52	2.462	32	2.522
91	1.239	71	2.055	51	2.471	31	2.523
90	1.233	70	2.105	50	2.479	30	2.524
89	1.227	69	2.155	49	2.488	29	2.525
88	1.279	68	2.179	48	2.488	28	2.529
87	1.330	67	2.202	47	2.488	27	2.533
86	1.382	66	2.226	46	2.488	26	2.536
85	1.433	65	2.249	45	2.488	25	2.540
84	1.485	64	2.273	44	2.488	24	2.544
83	1.535	63	2.286	43	2.490	23	2.545
82	1.585	62	2.300	42	2.492	22	2.546
81	1.634	61	2.313	41	2.495	21	2.548
80	1.684	60	2.327	40	2.497	20	2.549
79	1.734	59	2.340	39	2.499	19	2.550
78	1.768	58	2.361	38	2.503	18	2.551
77	1.802	57	2.382	37	2.507	17	2.552
76	1.837	56	2.403	36	2.512	16	2.554
75	1.871	55	2.424	35	2.516	15	2.555
						14	2.556

Older Age Ninety-Five Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
95	1.338	75	1.917	55	2.465	35	2.547
94	1.306	74	1.965	54	2.475	34	2.548
93	1.274	73	2.013	53	2.485	33	2.549
92	1.243	72	2.062	52	2.495	32	2.551
91	1.211	71	2.110	51	2.505	31	2.552
90	1.179	70	2.158	50	2.615	30	2.553
89	1.235	69	2.186	49	2.516	29	2.556
88	1.291	68	2.214	48	2.517	28	2.560
87	1.347	67	2.242	47	2.517	27	2.563
86	1.403	66	2.270	46	2.518	26	2.567
85	1.459	65	2.298	45	2 519	25	2.570
84	1.515	64	2.309	44	2.520	24	2.572
83	1.572	63	2.321	43	2.521	23	2.573
82	1.628	62	2.332	42	2.522	22	2.575
81	1.685	61	2 344	41	2.523	21	2.576
80	1.741	60	2.355	40	2.524	20	2.578
79	1.776	59	2.377	39	2.529	19	2.579
78	1.811	58	2.399	38	2.533	18	2.579
77	1.847	57	2.421	37	2.538	17	2.580
76	1.882	56	2.443	36	2.542	16	2.580
						15	2.581

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Ninety-Six Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
96	1.379	76	1.898	56	2.421	36	2.507
95	1.338	75	1.931	55	2.432	35	2.509
94	1.297	74	1.974	54	2.443	34	2.510
93	1.255	73	2.016	53	2.453	33	2.512
92	1.214	72	2.059	52	2.464	32	2.513
91	1.173	71	2.102	51	2.475	31	2.515
90	1.221	70	2.135	50	2.477	30	2.518
89	1.268	69	2.168	49	2.479	29	2.521
88	1.316	68	2.200	48	2.481	28	2.523
87	1.363	67	2.233	47	2.483	27	2.526
86	1.411	66	2.266	46	2.485	26	2.529
85	1.469	65	2.277	45	2.485	25	2.531
84	1.527	64	2.288	44	2.485	24	2.533
83	1.586	63	2.299	43	2.485	23	2.534
82	1.644	62	2.310	42	2.485	22	2.536
81	1.702	61	2.321	41	2.485	21	2.538
80	1.739	60	2.341	40	2.489	20	2.538
79	1.776	59	2.361	39	2.494	19	2.539
78	1.814	58	2.381	38	2.498	18	2.539
77	1.851	57	2.401	37	2.503	17	2.540
						16	2.540

Older Age Ninety-Seven Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
97	1.352	77	1.811	57	2.295	37	2.384
96	1.320	76	1.845	56	2.307	36	2.386
95	1.288	75	1.879	55	2.318	35	2.388
94	1.257	74	1.914	54	2.330	34	2.389
93	1.225	73	1.948	53	2.341	33	2.391
92	1.193	72	1.982	52	2.353	32	2.393
91	1.222	71	2.018	51	2.356	31	2.395
90	1.251	70	2.054	50	2.359	30	2.397
89	1.279	69	2.089	49	2.361	29	2.398
88	1.308	68	2.125	48	2.364	28	2.400
87	1.337	67	2.161	47	2.367	27	2.402
86	1.394	66	2.172	46	2.367	26	2.404
85	1.452	65	2.182	45	2.366	25	2.406
84	1.509	64	2.193	44	2.366	24	2.409
83	1.567	63	2.203	43	2.365	23	2.411
82	1.624	62	2.214	42	2.365	22	2.413
81	1.661	61	2.230	41	2.369	21	2.413
80	1.699	60	2.246	40	2.373	20	2.413
79	1.736	59	2.263	39	2.376	19	2.414
78	1.774	58	2.279	38	2.380	18	2.414
						17	2.414

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age Ninety-Eight Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
98	1.336	78	1.726	58	2.149	38	2.238
97	1.314	77	1.752	57	2.161	37	2.240
96	1.292	76	1.778	56	2.173	36	2.242
95	1.270	75	1.805	55	2.186	35	2.244
94	1.248	74	1.831	54	2.198	34	2.246
93	1.226	73	1.857	53	2.210	33	2.248
92	1.239	72	1.893	52	2.214	32	2.249
91	1.252	71	1.929	51	2.217	31	2.250
90	1.266	70	1.966	50	2.221	30	2.250
89	1.279	69	2.002	49	2.224	29	2.251
88	1.292	68	2.038	48	2.228	28	2.252
87	1.341	67	2.048	47	2.227	27	2.255
86	1.391	66	2.059	46	2.226	26	2.257
85	1.440	65	2.069	45	2.226	25	2.260
84	1.490	64	2.080	44	2.225	24	2.262
83	1.539	63	2.090	43	2.224	23	2.265
82	1.576	62	2.102	42	2.227	22	2.265
81	1.614	61	2.114	41	2.230	21	2.265
80	1.651	60	2.125	40	2.232	20	2.266
79	1.689	59	2.137	39	2.235	19	2.266
						18	2.266

Older Age Ninety-Nine Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
99	1.261	79	1.576	59	1.929	39	2.010
98	1.249	78	1.597	58	1.941	38	2.012
97	1.237	77	1.617	57	1.953	37	2.014
96	1.226	76	1.638	56	1.964	36	2.016
95	1.214	75	1.658	55	1.976	35	2.018
94	1.202	74	1.679	54	1.988	34	2.020
93	1.202	73	1.712	53	1.991	33	2.020
92	1.202	72	1.744	52	1.995	32	2.021
91	1.202	71	1.777	51	1.998	31	2.021
90	1.202	70	1.809	50	2.002	30	2.022
89	1.202	69	1.842	49	2.005	29	2.022
88	1.244	68	1.852	48	2.004	28	2.024
87	1.286	67	1.862	47	2.003	27	2.027
86	1.327	66	1.871	46	2.003	26	2.029
85	1.369	65	1.881	45	2.002	25	2.032
84	1.411	64	1.891	44	2.001	24	2.034
83	1.444	63	1.899	43	2.003	23	2.034
82	1.477	62	1.906	42	2.005	22	2.034
81	1.510	61	1.914	41	2.006	21	2.035
80	1.543	60	1.921	40	2.008	20	2.035
						19	2.035

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age One Hundred Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
100	0.969	79	1.298	58	1.554	37	1.603
99	0.984	78	1.313	57	1.564	36	1.605
98	1.000	77	1.328	56	1.573	35	1.607
97	1.015	76	1.343	55	1.582	34	1.607
96	1.031	75	1.358	54	1.585	33	1.607
95	1.046	74	1.381	53	1.588	32	1.608
94	1.028	73	1.404	52	1.591	31	1.608
93	1.010	72	1.428	51	1.594	30	1.608
92	0.992	71	1.451	50	1.597	29	1.610
91	0.974	70	1.474	49	1.596	28	1.611
90	0.956	69	1.482	48	1.596	27	1.613
89	0.993	68	1.490	47	1.595	26	1.614
88	1.030	67	1.499	46	1.595	25	1.616
87	1.068	66	1.507	45	1.594	24	1.616
86	1.105	65	1.515	44	1.595	23	1.616
85	1.142	64	1.519	43	1.596	22	1.617
84	1.170	63	1.523	42	1.596	21	1.617
83	1.198	62	1.528	41	1.597	20	1.617
82	1.227	61	1.532	40	1.598		
81	1.255	60	1.536	39	1.600		
80	1.283	59	1.545	38	1.602		

Older Age One Hundred and One Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
101	0.674	80	0.974	59	1.147	38	1.180
100	0.706	79	0.985	58	1.153	37	1.181
99	0.738	78	0.995	57	1.159	36	1.182
98	0.770	77	1.006	56	1.165	35	1.182
97	0.802	76	1.017	55	1.167	34	1.182
96	0.834	75	1.031	54	1.169	33	1.183
95	0.815	74	1.046	53	1.170	32	1.183
94	0.796	73	1.060	52	1.172	31	1.183
93	0.776	72	1.075	51	1.174	30	1.184
92	0.757	71	1.089	50	1.174	29	1.185
91	0.738	70	1.096	49	1.174	28	1.185
90	0.763	69	1.103	48	1.174	27	1.186
89	0.787	68	1.109	47	1.174	26	1.187
88	0.812	67	1.116	46	1.174	25	1.187
87	0.836	66	1.123	45	1.174	24	1.187
86	0.861	65	1.125	44	1.175	23	1.188
85	0.881	64	1.128	43	1.175	22	1.188
84	0.902	63	1.130	42	1.176	21	1.188
83	0.922	62	1.133	41	1.176		
82	0.943	61	1.135	40	1.177		
81	0.963	60	1.141	39	1.178		

Value of £1 per Annum during the joint Continuance of Two Lives.
(Carlisle 4½ per Cent.)

Older Age One Hundred and Two Years.

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
102	.381	81	.633	60	.728	39	.746
101	.417	80	.639	59	.731	38	.746
100	.452	79	.646	58	.734	37	.747
99	.488	78	.652	57	.737	36	.747
98	.523	77	.658	56	.738	35	.747
97	.559	76	.665	55	.739	34	.748
96	.549	75	.672	54	.741	33	.748
95	.540	74	.678	53	.742	32	.748
94	.530	73	.685	52	.743	31	.748
93	.521	72	.692	51	.743	30	.749
92	.511	71	.697	50	.743	29	.749
91	.521	70	.702	49	.744	28	.750
90	.531	69	.706	48	.744	27	.750
89	.542	68	.711	47	.744	26	.750
88	.552	67	.716	46	.744	25	.750
87	.562	66	.717	45	.744	24	.751
86	.575	65	.718	44	.744	23	.751
85	.588	64	.720	43	.744	22	.751
84	.601	63	.721	42	.744		
83	.614	62	.722	41	.745		
82	.627	61	.725	40	.745		

Older Age One Hundred and Three Years,

Age.	Value.	Age.	Value.	Age.	Value.	Age.	Value.
103	.106	82	.274	61	.309	40	.315
102	.135	81	.276	60	.309	39	.315
101	.164	80	.279	59	.310	38	.315
100	.193	79	.281	58	.311	37	.315
99	.222	78	.284	57	.312	36	.315
98	.251	77	.286	56	.312	35	.316
97	.248	76	.288	55	.313	34	.316
96	.245	75	.290	54	.313	33	.316
95	.242	74	.292	53	.314	32	.316
94	.239	73	.294	52	.314	31	.316
93	.236	72	.296	51	.314	30	.316
92	.239	71	.298	50	.315	29	.316
91	.241	70	.300	49	.315	28	.316
90	.244	69	.302	48	.315	27	.316
89	.246	68	.304	47	.315	26	.316
88	.249	67	.305	46	.315	25	.316
87	.253	66	.305	45	.314	24	.316
86	.258	65	.306	44	.314	23	.316
85	.262	64	.306	43	.314		
84	.267	63	.307	42	.314		
83	.271	62	.308	41	.314		

TABLE XXII.

Showing the present Value of £1 to be received at the end of the Year in which an assigned Life may fail. (Carlisle Rate of Mortality.)

Age.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.
0	.46641	.43621	.41224	.39289
1	.38587	.35171	.32483	.30336
2	.34463	.30826	.27976	.25713
3	.31021	.27178	.24173	.21793
4	.29267	.25294	.22187	.19728
5	.28079	.23997	.20800	.18268
6	.27633	.23474	.20211	.17624
7	.27572	.23355	.20038	.17402
8	.27764	.23499	.20137	.17463
9	.28125	.23820	.20419	.17703
10	.28606	.24269	.20833	.18084
11	.29145	.24781	.21313	.18532
12	.29681	.25288	.21789	.18975
13	.30222	.25802	.22272	.19426
14	.30771	.26323	.22762	.19885
15	.31315	.26840	.23249	.20340
16	.31833	.27330	.23706	.20763
17	.32334	.27802	.24150	.21171
18	.32841	.28279	.24590	.21581
19	.33362	.28773	.25052	.22009
20	.33901	.29285	.25532	.22456
21	.34455	.29814	.26031	.22922
22	.35037	.30374	.26562	.23422
23	.35637	.30954	.27115	.23944
24	.36252	.31555	.27690	.24489
25	.36808	.32179	.28289	.25060
26	.37548	.32813	.28901	.25644
27	.38218	.33471	.29538	.26255
28	.38890	.34132	.30176	.26868
29	.39531	.34759	.30781	.27446
30	.40129	.35340	.31338	.27973
31	.40734	.35929	.31903	.28509
32	.41357	.36539	.32491	.29069
33	.42010	.37182	.33113	.29664
34	.42694	.37858	.33771	.30298
35	.43399	.38560	.34457	.30961
36	.44117	.39287	.35170	.31653
37	.44870	.40029	.35901	.32364
38	.45624	.40787	.36649	.33094
39	.46393	.41562	.37416	.33844
40	.47156	.42332	.38178	.34590
41	.47893	.43073	.38911	.35306
42	.48621	.43806	.39636	.36013
43	.49352	.44543	.40364	.36724
44	.50108	.45304	.41120	.37465
45	.50885	.46092	.41905	.38237
46	.51694	.46919	.42734	.39055
47	.52542	.47788	.43607	.39922
48	.53439	.48711	.44542	.40855
49	.54406	.49715	.45565	.41884
50	.55429	.50782	.46658	.42988
51	.56509	.51914	.47824	.44174

TABLE XXII.

Showing the present Value of £1 to be received at the end of the Year in which an assigned Life may fail. (Carlisle Rate of Mortality.)

Age.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.
0	.37700	.35251	.33421	.32015
1	.28595	.25974	.24079	.22674
2	.23891	.21179	.19258	.17867
3	.19886	.17065	.15097	.13696
4	.17757	.14857	.12847	.11430
5	.16238	.13255	.11198	.09748
6	.15548	.12491	.10387	.08904
7	.15286	.12163	.10007	.08489
8	.15305	.12117	.09916	.08363
9	.15514	.12264	.10021	.08430
10	.15862	.12558	.10263	.08637
11	.16281	.12921	.10577	.08919
12	.16695	.13277	.10891	.09193
13	.17114	.13640	.11211	.09474
14	.17543	.14013	.11538	.09763
15	.17967	.14381	.11859	.10045
16	.18362	.14715	.12147	.10289
17	.18733	.15026	.12408	.10511
18	.19110	.15343	.12677	.10733
19	.19505	.15677	.12958	.10970
20	.19919	.16028	.13259	.11222
21	.20352	.16402	.13579	.11496
22	.20819	.16809	.13933	.11807
23	.21310	.17240	.14312	.12141
24	.21824	.17692	.14711	.12496
25	.22367	.18174	.15136	.12874
26	.22919	.18672	.15581	.13267
27	.23500	.19198	.16052	.13689
28	.24086	.19725	.16529	.14119
29	.24633	.20211	.16962	.14504
30	.25129	.20642	.17335	.14830
31	.25633	.21083	.17714	.15155
32	.26162	.21547	.18120	.15504
33	.26729	.22051	.18564	.15889
34	.27333	.22594	.19049	.16319
35	.27967	.23172	.19565	.16778
36	.28633	.23783	.20115	.17274
37	.29319	.24411	.20684	.17793
38	.30024	.25062	.21279	.18326
39	.30752	.25736	.21894	.18889
40	.31477	.26404	.22509	.19444
41	.32167	.27038	.23085	.19963
42	.32852	.27666	.23648	.20467
43	.33538	.28294	.24210	.20971
44	.34257	.28957	.24805	.21504
45	.35010	.29653	.25440	.22074
46	.35810	.30400	.26127	.22696
47	.36662	.31204	.26873	.23378
48	.37586	.32087	.27697	.24141
49	.38610	.33077	.28639	.25030
50	.39714	.34164	.29679	.26022
51	.40905	.35347	.30831	.27126

TABLE XXII.

Showing the present Value of £1 to be received at the end of the Year in which an assigned Life may fail. (Carlisle Rate of Mortality.)

Age.	3 per Cent.	3½ per Cent.	4 per Cent.	4½ per Cent.
52	.57598	.53060	.49008	.45381
53	.58699	.54222	.50211	.46611
54	.59812	.55399	.51436	.47867
55	.60948	.56605	.52694	.49162
56	.62096	.57830	.53977	.50487
57	.63260	.59077	.55286	.51844
58	.64413	.60315	.56591	.53199
59	.65512	.61494	.57833	.54491
60	.66531	.62589	.58987	.55691
61	.67436	.63559	.60007	.56748
62	.68325	.64513	.61012	.57791
63	.69222	.65480	.62033	.58853
64	.70157	.66490	.63103	.59970
65	.71112	.67526	.64203	.61122
66	.72103	.68599	.65347	.62325
67	.73122	.69713	.66539	.63582
68	.74168	.70859	.67770	.64884
69	.75246	.72041	.69043	.66236
70	.76340	.73248	.70349	.67626
71	.77465	.74496	.71701	.69072
72	.78525	.75671	.72979	.70441
73	.79483	.76733	.74136	.71681
74	.80334	.77675	.75161	.72781
75	.81033	.78458	.76004	.73683
76	.81717	.79211	.76831	.74569
77	.82352	.79915	.77597	.75391
78	.82996	.80631	.78378	.76230
79	.83713	.81433	.79256	.77177
80	.84374	.82172	.80066	.78051
81	.85090	.82976	.80950	.79008
82	.85734	.83698	.81745	.79869
83	.86392	.84439	.82561	.80756
84	.87027	.85154	.83352	.81617
85	.87682	.85894	.84173	.82513
86	.88253	.86542	.84891	.83298
87	.88719	.87071	.85477	.83939
88	.89002	.87390	.85833	.84328
89	.89325	.87758	.86242	.84777
90	.89809	.88308	.86861	.85458
91	.89861	.88371	.86929	.85535
92	.89582	.88050	.86569	.85138
93	.89261	.87683	.86156	.84677
94	.89118	.87515	.85962	.84461
95	.89057	.37437	.85868	.84349
96	.89212	.87605	.86047	.84536
97	.89633	.88079	.86569	.85101
98	.90132	.88637	.87184	.85768
99	.90880	.89487	.88127	.86799
100	.92185	.90979	.89797	.88639
101	.93511	.92496	.91500	.90521
102	.94842	.94027	.93224	.92433
103	.96144	.95529	.94921	.94320

TABLE XXII.

iowing the present Value of £1 to be received at the end of the Year in which an assigned Life may fail. (Carlisle Rate of Mortality.)

Age.	5 per Cent.	6 per Cent.	7 per Cent.	8 per Cent.
52	.42124	.36558	.32015	.28267
53	.43371	.37804	.33238	.29459
54	.44648	.39039	,34507	.30696
55	.45967	.40431	.35842	.32007
56	.47319	.41812	.37229	.33370
57	.48710	.43243	.38668	.34800
58	.50105	.44687	.40121	.36252
59	.51433	.46062	.41514	.37644
60	.52667	.47336	.42803	.38926
61	.53752	.48445	.43922	.40036
62	.54824	.49549	.45027	.41133
63	.55914	.50676	.46165	.42259
64	.57067	.51875	.47389	.43481
65	.58262	.53126	.48664	.44763
66	.59519	.54440	.50012	.46133
67	.60824	.55832	.51451	.47593
68	.62186	.57287	.52969	.49141
69	.63605	.58809	.54565	.50793
70	.65067	.60389	.56234	.52519
71	.66595	.62053	.58000	.54371
72	.68043	.63638	.59687	.56134
73	.69357	.65075	.61225	.57748
74	.70524	.66355	.62586	.59178
75	.71481	.67396	.63698	.60333
76	.72419	.68421	.64791	.61481
77	.73291	.69377	.65805	.62548
78	.74181	.70351	.66851	.63645
79	.75191	.71472	.68055	.64919
80	.76119	.72502	.69167	.66096
81	.77148	.73645	.70410	.67422
82	.78067	.74675	.71529	.68615
83	,79019	.75740	.72693	.69859
84	.79948	.76781	.73838	.71089
85	.80910	.77874	.75042	.72393
86	.81762	.78836	.76108	.73548
87	.82452	.79628	.76978	.74496
88	.82870	.80101	.77502	.75067
89	.83357	.80658	.79078	.75733
90	.84103	.81513	.79196	.76793
91	.84186	.81615	.78634	.76926
92	.83752	.81111	.77973	.76311
93	.83248	.80528	.77633	.75578
94	.83005	.80234	.77633	.75185
95	.82876	.80064	.77424	.74941
96	.83071	.80268	.77626	.75126
97	.83676	.80936	.78352	.75904
98	.84391	.81734	.79216	.76822
99	.85500	.82996	.80609	.78326
100	.87505	.85306	.83193	.81163
101	.89562	.87689	.85875	.84133
102	.91653	.90128	.88650	.87207
103	.93728	.92562	.91417	.90304

TABLE XXIII.

Present Value of £1 per Annum during the joint Continuance of a Male and Female Life, when the Female is the Younger Life.

(Chester 3 per Cent.)

Ages.		Value of the, Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.
Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.	
0	0	10.060	40	30	13.115	60	30	9.020	75	30	6.158	85	75	3.206
5	0	14.050		35	12.765		35	8.874		35	6.088		80	2.719
	5	18.751		40	12.372		40	8.722		40	6.021		85	2.809
10	0	14.124	45	0	9.800		45	8.538		45	5.930	90	0	2.624
	5	18.864		5	13.071		50	8.292		50	5.862		5	3.310
	10	18.808		10	13.163		55	7.853		55	5.674		10	3.368
15	0	13.544		15	12.882		60	7.113		60	5.261		15	3.342
	5	18.094		20	12.667	65	0	6.501		65	5.051		20	3.329
	10	18.065		25	12.370		5	8.581		70	4.289		25	3.286
	15	17.518		30	12.263		10	8.689		75	3.897		30	3.295
20	0	13.047		35	11.973		15	8.554	80	0	4.099		35	3.273
	5	17.437		40	11.647		20	8.460		5	5.314		40	3.252
	10	17.433		45	11.245		25	8.306		10	5.398		45	3.232
	15	16.931	50	0	9.016		30	8.292		15	5.337		50	3.220
	20	16.507		5	12.013		35	8.174		20	5.297		55	3.183
25	0	12.574		10	12.105		40	8.054		25	5.216		60	3.033
	5	16.810		15	11.870		45	7.914		30	5.222		65	3.019
	10	16.830		20	11.689		50	7.729		35	5.170		70	2.700
	15	16.371		25	11.433		55	7.382		40	5.121		75	2.551
	20	15.989		30	11.357		60	6.739		45	5.072		80	2.207
	25	15.493		35	11.120		65	6.352		50	5.019		85	2.257
30	0	12.080		40	10.859	70	0	5.264		55	4.890		90	2.147
	5	16.151		45	10.533		5	6.897		60	4.575	95	0	1.978
	10	16.193		50	10.106		10	6.991		65	4.436		5	2.446
	15	15.776	55	0	8.175		15	6.893		70	3.819		10	2.491
	20	15.437		5	10.864		20	6.826		75	3.500		15	2.475
	25	14.989		10	10.969		25	6.710		80	2.952		20	2.472
	30	14.751		15	10.760		30	6.705	85	0	3.528		25	2.443
35	0	11.333		20	10.619		35	6.622		5	4.535		30	2.450
	5	15.145		25	10.402		40	6.539		10	4.612		35	2.439
	10	15.206		30	10.352		45	6.445		15	4.566		40	2.427
	15	14.838		35	10.162		50	6.326		20	4.540		45	2.415
	20	14.544		40	9.958		55	6.085		25	4.474		50	2.408
	25	14.152		45	9.707		60	5.605		30	4.484		55	2.403
	30	13.962		50	9.369		65	5.332		35	4.446		60	2.302
	35	13.548		55	8.811		70	4.501		40	4.419		65	2.326
40	0	10.557	60	0	7.097	75	0	4.825		45	4.376		70	2.125
	5	14.101		5	9.400		5	6.302		50	4.345		75	2.051
	10	14.178		10	9.503		10	6.395		55	4.266		80	1.811
	15	13.854		15	9.343		15	6.313		60	4.022		85	1.819
	20	13.602		20	9.320		20	6.258		65	3.954		90	1.808
	25	13.260		25	9.049		25	6.156		70	3.453		95	1.437

resent Value of £1 per Annum during the joint Continuance of a Male and Female Life, when the Male is the Younger Life.

(Chester 3 per Cent.)

Ages.			Ages.			Ages.			Ages.			Ages.		
Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.
0	0	10.060	40	30	14.721	60	30	9.772	75	30	5.976	85	75	3.348
5	0	13.382		35	13.078		35	9.446		35	5.860		80	3.038
	5	18.751		40	12.372		40	9.112		40	5.721		85	2.089
10	0	13.314	45	0	9.960		45	8.771		45	5.583	90	0	2.875
	5	18.669		5	13.996		50	8.389		50	5.433		5	3.827
	10	18.808		10	14.263		55	7.906		55	5.259		10	3.942
15	0	12.863		15	13.897		60	7.113		60	4.836		15	3.901
	5	18.048		20	13.593	65	0	6.422		65	4.730		20	3.866
	10	18.209		25	13.338		5	8.918		70	4.064		25	3.846
	15	17.518		30	13.067		10	9.147		75	3.897		30	3.861
20	0	12.470		35	12.508		15	8.972	80	0	3.554		35	3.818
	5	17·506		40	11.884		20	8.851		5	4.821		40	3.761
	10	17.690		45	11.245		25	8.772		10	4.953		45	3.704
	15	17.048	50	0	9.246		30	8.719		15	4.882		50	3.652
	20	16.507		5	12.979		35	8.492		20	4.832		55	3.597
25	0	11.985		10	13.249		40	8.229		25	4.803		60	3.384
	5	16.836		15	12.922		45	7.967		30	4.892		65	3.391
	10	17 040		20	12.698		50	7.669		35	4.719		70	3.009
	15	16.452		25	12.478		55	7.299		40	4.618		75	2.929
	20	15.960		30	12.272		60	6.624		45	4.521		80	2.707
	25	15.493		35	11.797		65	6.352		50	4.413		85	2.560
30	0	11.664		40	11.267	70	0	5.106		55	4.283		90	2.147
	5	16.389		45	10.718		5	7.033		60	3.975	95	0	1.801
	10	16.616		50	10.106		10	7.221		65	3.895		5	2.330
	15	16.074	55	0	8.347		15	7.097		70	3.319		10	2.395
	20	15.628		5	11.687		20	7.009		75	3.256		15	2.379
	25	15.205		10	11.950		25	6.956		80	2.952		20	2.364
	30	14.751		15	11.678		30	6.932	85	0	3.542		25	2.351
35	0	11.142		20	11.484		35	6.778		5	4.811		30	2.362
	5	15.672		25	11.355		40	6.598		10	4.951		35	2.346
	10	15.909		30	11.186		45	6.413		15	4.883		40	2.322
	15	15.422		35	10.803		50	6.215		20	4.833		45	2.298
	20	15.028		40	10.369		55	5.959		25	4.807		50	2.272
	25	14.661		45	9.927		60	5.462		30	4.815		55	2.265
	30	14.265		50	9.423		65	5.289		35	4.740		60	2.154
	35	13.548		55	8.811		70	4.501		40	4.646		65	2.179
40	0	10.586	60	0	7.213	75	0	4.406		45	4.557		70	1.997
	5	14.882		5	10.066		5	6.025		50	4.466		75	1.955
	10	15.151		10	10.307		10	6.191		55	4.350		80	1.844
	15	14.707		15	10.090		15	6.095		60	4.049		85	1.787
	20	14.365		20	9.939		20	6.026		65	3.998		90	1.567
	25	14.054		25	9.832		25	5.985		70	3.468		95	1.437

TABLE XXIII.

Present Value of £1 per Annum during the joint Continuance of a Male and Female Life, when the Female is the Younger Life.

(Chester 3 per Cent.)

Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.
Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.	
0	0	10.060	40	30	13.115	60	30	9.020	75	30	6.158	85	75	3.206
5	0	14.050		35	12.765		35	8.874		35	6.088		80	2.719
	5	18.751		40	12.372		40	8.722		40	6.021		85	2.809
10	0	14.124	45	0	9.800		45	8.538		45	5.950	90	0	2.624
	5	18.864		5	13.071		50	8.292		50	5.862		5	3.310
	10	18.808		10	13.163		55	7.853		55	5.674		10	3.368
15	0	13.544		15	12.882		60	7.113		60	5.261		15	3.342
	5	18.094		20	12.667	65	0	6.501		65	5.051		20	3.329
	10	18.065		25	12.370		5	8.581		70	4.289		25	3.286
	15	17.518		30	12.263		10	8.689		75	3.897		30	3.295
20	0	13.047		35	11.973		15	8.554	80	0	4.099		35	3.273
	5	17.437		40	11.647		20	8.460		5	5.314		40	3.252
	10	17.433		45	11.245		25	8.306		10	5.398		45	3.232
	15	16.931	50	0	9.016		30	8.292		15	5.337		50	3.220
	20	16.507		5	12.013		35	8.174		20	5.297		55	3.183
25	0	12.574		10	12.105		40	8.054		25	5.216		60	3.033
	5	16.810		15	11.870		45	7.914		30	5.222		65	3.019
	10	16.830		20	11.689		50	7.729		35	5.170		70	2.700
	15	16.371		25	11.433		55	7.382		40	5.121		75	2.551
	20	15.989		30	11.357		60	6.739		45	5.072		80	2.207
	25	15.493		35	11.120		65	6.352		50	5.019		85	2.257
30	0	12.080		40	10.859	70	0	5.264		55	4.890		90	2.147
	5	16.151		45	10.533		5	6.897		60	4.575	95	0	1.978
	10	16.193		50	10.106		10	6.991		65	4.436		5	2.446
	15	15.776	55	0	8.175		15	6.893		70	3.819		10	2.491
	20	15.437		5	10.864		20	6.826		75	3.500		15	2.475
	25	14.989		10	10.969		25	6.710		80	2.952		20	2.472
	30	14.751		15	10.760		30	6.705	85	0	3.528		25	2.443
35	0	11.333		20	10.619		35	6.622		5	4.535		30	2.450
	5	15.145		25	10.402		40	6.539		10	4.612		35	2.439
	10	15.206		30	10.352		45	6.445		15	4.566		40	2.427
	15	14.838		35	10.162		50	6.326		20	4.540		45	2.415
	20	14.544		40	9.958		55	6.085		25	4.474		50	2.408
	25	14.152		45	9.707		60	5.605		30	4.484		55	2.403
	30	13.962		50	9.369		65	5.332		35	4.446		60	2.302
	35	13.548		55	8.811		70	4.501		40	4.419		65	2.326
40	0	10.557	60	0	7.097	75	0	4.825		45	4.376		70	2.125
	5	14.101		5	9.400		5	6.302		50	4.345		75	2.051
	10	14.178		10	9.503		10	6.395		55	4.266		80	1.811
	15	13.854		15	9.343		15	6.313		60	4.022		85	1.819
	20	13.602		20	9.320		20	6.258		65	3.954		90	1.808
	25	13.260		25	9.049		25	6.156		70	3.453		95	1.437

resent Value of £1 per Annum during the joint Continuance of a Male and Female Life, when the Male is the Younger Life.

(Chester 3 per Cent.)

Ages.			Ages.			Ages.			Ages.			Ages.		
Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.	Female.	Male.	Value of the Annuity.
0	0	10.060	40	30	14.721	60	30	9.772	75	30	5.976	85	75	3.348
5	0	13.382		35	13.078		35	9.446		35	5.860		80	3.038
	5	18.751		40	12.372		40	9.112		40	5.721		85	2.089
10	0	13.314	45	0	9.960		45	8.771		45	5.583	90	0	2.875
	5	18.669		5	13.996		50	8.389		50	5.433		5	3.827
	10	18.808		10	14.263		55	7.906		55	5.259		10	3.942
15	0	12.863		15	13.897		60	7.113		60	4.836		15	3.901
	5	18.048		20	13.593	65	0	6.422		65	4.730		20	3.866
	10	18.209		25	13.338		5	8.918		70	4.064		25	3.846
	15	17.518		30	13.067		10	9.147		75	3.897		30	3.861
20	0	12.470		35	12.508		15	8.972	80	0	3.554		35	3.818
	5	17·506		40	11.884		20	8.851		5	4.821		40	3.761
	10	17.690		45	11.245		25	8.772		10	4.953		45	3.704
	15	17.048	50	0	9.246		30	8.719		15	4.882		50	3.652
	20	16.507		5	12.979		35	8.492		20	4.832		55	3.597
25	0	11.985		10	13.249		40	8.229		25	4.803		60	3.384
	5	16.836		15	12.922		45	7.967		30	4.892		65	3.391
	10	17 040		20	12.698		50	7.669		35	4.719		70	3.009
	15	16.452		25	12.478		55	7.299		40	4.618		75	2.929
	20	15.960		30	12.272		60	6.624		45	4.521		80	2.707
	25	15.493		35	11.797		65	6.352		50	4.413		85	2.560
30	0	11.664		40	11.267	70	0	5.106		55	4.283		90	2.147
	5	16.389		45	10.718		5	7.033		60	3.975	95	0	1.801
	10	16.616		50	10.106		10	7.221		65	3.895		5	2.330
	15	16.074	55	0	8.347		15	7.097		70	3.319		10	2.395
	20	15.628		5	11.687		20	7.009		75	3.256		15	2.379
	25	15.205		10	11.950		25	6.956		80	2.952		20	2.364
	30	14.751		15	11.678		30	6.932	85	0	3.542		25	2.351
35	0	11.142		20	11.484		35	6.778		5	4.811		30	2.362
	5	15.672		25	11.355		40	6.598		10	4.951		35	2.346
	10	15.909		30	11.186		45	6.413		15	4.883		40	2.322
	15	15.422		35	10.803		50	6.215		20	4.833		45	2.298
	20	15.028		40	10.369		55	5.959		25	4.807		50	2.272
	25	14.661		45	9.927		60	5.462		30	4.815		55	2.265
	30	14.265		50	9.423		65	5.289		35	4.740		60	2.154
	35	13.548		55	8.811		70	4.501		40	4.646		65	2.179
40	0	10.586	60	0	7.213	75	0	4.406		45	4.557		70	1.997
	5	14.882		5	10.066		5	6.025		50	4.466		75	1.955
	10	15.151		10	10.307		10	6.191		55	4.350		80	1.844
	15	14.707		15	10.090		15	6.095		60	4.049		85	1.787
	20	14.365		20	9.939		20	6.026		65	3.998		90	1.567
	25	14.054		25	9.832		25	5.985		70	3.468		95	1.437

TABLE XXIII.

Present Value of £1 per Annum during the joint Continuance of Two Male Lives.

(Chester 5 per Cent.)

Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.
Older.	Younger.		Older.	Younger.		Older.	Younger.		Older.	Younger.		Older.	Younger.	
0	0	6.917	40	30	10.461	60	30	7.679	75	30	5.485	85	75	2.998
5	0	9.649		35	10.075		35	7.480		35	5.383		80	2.748
	5	13.511		40	9.643		40	7.248		40	5.272		85	2.575
10	0	9.796	45	0	7.443		45	7.016		45	5.141	90	0	2.316
	5	13.707		5	10.390		50	6.757		50	5.010		5	3.056
	10	13.917		10	10.621		55	6.431		55	4.850		10	3.143
15	0	9.480		15	10.379		60	5.844		60	4.481		15	3.043
	5	13.275		20	9.768	65	0	5.290		65	4.387		20	3 087
	10	13.490		25	9.659		5	7.298		70	3.781		25	3.072
	15	13.083		30	9.646		10	7.492		75	3.630		30	3.083
20	0	9.229		35	9.587		15	7.360	80	0	3.489		35	3.053
	5	12.924		40	9.033		20	7.267		5	4.727		40	3.011
	10	13.144		45	8.810		25	7.208		10	4.861		45	2.969
	15	12.766	50	0	6.964		30	7.179		15	4.794		50	2.930
	20	12.465		5	9.705		35	7.013		20	4.745		55	2.892
25	0	8.999		10	9.931		40	6.817		25	4.718		60	2.733
	5	12.603		15	9.717		45	6.623		30	4.722		65	2.740
	10	12.830		20	9.563		50	6.407		35	4.646		70	2.460
	15	12.475		25	9.445		55	6.139		40	4.553		75	2.428
	20	12.194		30	9.342		60	5.608		45	4.462		80	2.230
	25	11.947		35	9.049		65	5.426		50	4.367		85	2.119
30	0	8.764		40	8.713	70	0	4.357		55	4.250		90	1.813
	5	12.271		45	8.370		5	5.964		60	3.954	95	0	1.778
	10	12.505		50	7.989		10	6.124		65	3.895		5	2.302
	15	12.173	55	0	6.413		15	6.026		70	3.392		10	2.367
	20	11.915		5	8.932		20	5.956		75	3.267		15	2.352
	25	11.691		10	9.151		25	5.914		80	2.871		20	2.336
	30	11.463		15	8.966		30	5.900	85	0	3.053		25	2.323
35	0	8.338		20	8.835		35	5.779		5	4.101		30	2.334
	5	11.674		25	8.741		40	5.639		10	4.218		35	2.319
	10	11.909		30	8.667		45	5.493		15	4.170		40	2.295
	15	11.600		35	8.418		50	5.336		20	4.130		45	2.272
	20	11.378		40	8.111		55	5.141		25	4.108		50	2.246
	25	11.183		45	7.843		60	4.729		30	4.119		55	2.239
	30	10.987		50	7.518		65	4.602		35	4.064		60	2.129
	35	10.556		55	7.121		70	3.955		40	3.993		65	2.155
40	0	7.893	60	0	5.676	75	0	4.043		45	3.926		70	1.974
	5	10.032		5	7.860		5	5.518		50	3.857		75	1.932
	10	11.266		10	8.059		10	5.671		55	3.780		80	1.822
	15	10.995		15	7.906		15	5.585		60	3.536		85	1.759
	20	10.792		20	7.799		20	5.524		65	3.519		90	1.548
	25	10.624		25	7.727		25	5.489		70	3.093		95	1.421

'resent Value of £1 per Annum during the joint Continuance of Two Female Lives.

(Chester 5 per Cent.)

Ages.			Ages.			Ages.			Ages.			Ages.		
Older.	Younger.	Value of the Annuity.	Older.	Younger.	Value of the Annuity.	Older.	Younger.	Value of the Annuity.	Older.	Younger.	Value of the Annuity.	Older.	Younger.	Value of the Annuity.
0	0	8.135	40	30	11.365	60	30	8.424	75	30	5.381	85	75	3.097
5	0	10.804		35	11.084		35	8.297		35	5.326		80	2.619
	5	14.398		40	10.792		40	8.169		40	5.273		85	2.712
10	0	10.816	45	0	8.683		45	8.016		45	5.216	90	0	2.859
	5	14.416		5	11.556		50	7.813		50	5.152		5	3.620
	10	14.444		10	11.647		55	7.437		55	5.012		10	3.684
15	0	10.522		15	11.413		60	6.770		60	4.673		15	3.655
	5	14.023		20	11.237	65	0	5.992		65	4.529		20	3.641
	10	14.061		25	10.987		5	7.886		70	3.895		25	3.592
	15	13.700		30	10.910		10	8.073		75	3.579		30	3.602
20	0	10.277		35	10.661		15	7.875	80	0	3.445		35	3.578
	5	13.696		40	10.416		20	7.795		5	4.432		40	3.554
	10	13.743		45	10.093		25	7.659		10	4.502		45	3.531
	15	13.402	50	0	8.185		30	7.651		15	4.453		50	3.518
	20	13.123		5	10.889		35	7.550		20	4.423		55	3.478
25	0	9.959		10	10.988		40	7.449		25	4.358		60	3.308
	5	13.271		15	10.781		45	7.336		30	4.363		65	3.295
	10	13.327		20	10.627		50	7.189		35	4.322		70	2.937
	15	13.008		25	10.404		55	6.902		40	4.284		75	2.771
	20	12.714		30	10.349		60	6.339		45	4.245		80	2.384
	25	12.402		35	10.150		65	6.015		50	4.202		85	2.449
30	0	9.783		40	9.936	70	0	4.841		55	4.104		90	2.318
	5	13.036		45	9.668		5	6.321		60	3.851	95	0	1.824
	10	13.102		50	9.314		10	6.412		65	3.748		5	2.246
	15	12.799	55	0	7.523		15	6.329		70	3.259		10	2.287
	20	12,559		5	10.085		20	6.274		75	3.009		15	2.273
	25	12.231		10	10.083		25	6.171		80	2.569		20	2.270
	30	12.082		15	9.907		30	6.171	85	0	3.458		25	2.244
35	0	9.454		20	9.791		35	6.100		5	4.458		30	2.251
	5	12.595		25	9.586		40	6.029		10	4.532		35	2.241
	10	12.669		30	9.549		45	5.954		15	4.486		40	2.230
	15	12.389		35	9.388		50	5.862		20	4.458		45	2.219
	20	12.170		40	9.217		55	5.667		25	4.393		50	2.213
	25	11.868		45	9.009		60	5.254		30	4.402		55	2.209
	30	11.743		50	8.729		65	5.040		35	4.363		60	2.119
	35	11.438		55	8.248		70	4.290		40	4.326		65	2.109
40	0	9.097	60	0	6.614	75	0	4.229		45	4.292		70	1.961
	5	12.114		5	8.743		5	5.485		50	4.261		75	1.894
	10	12.199		10	8.847		10	5.504		55	4.175		80	1.679
	15	11.939		15	8.705		15	5.463		60	3.932		85	1.684
	20	11.741		20	8.603		20	5.443		65	3.853		90	1.677
	25	11.465		25	8.444		25	5.377		70	3.351		95	1.344

TABLE XXIII.

Present Value of £1 per Annum during the joint Continuance of Two Lives (Male and Female) Female the Younger.

(Chester 5 per Cent.)

Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.
Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.		Male.	Female.	
0	0	7.498	40	30	10.673	60	30	7.744	75	30	5.504	85	75	2.998
5	0	10.462		35	10.439		35	7.636		35	5.446		80	2.553
	5	13.942		40	10.181		40	7.521		40	5.390		85	2.632
10	0	10.603	45	0	8.013		45	7.386		45	5.332	90	0	2.463
	5	14.134		5	10.644		50	7.209		50	5.264		5	3.097
	10	14.172		10	10.739		55	6.879		55	5.113		10	3.147
15	0	10.264		15	10.534		60	6.234		60	4.761		15	3.127
	5	13.677		20	10.388	65	0	5.666		65	4.600		20	3.116
	10	13.724		25	10.116		5	7.445		70	3.938		25	3.076
	15	13.384		30	10.099		10	7.545		75	3.600		30	3.084
20	0	9.984		35	9.898		15	7.437	80	0	3.723		35	3.065
	5	13.304		40	9.678		20	7.363		5	4.806		40	3.045
	10	13.429		45	9.408		25	7.418		10	4.883		45	3.027
	15	13.039	50	0	7.489		30	7.228		15	4.830		50	3.016
	20	12.781		5	9.932		35	7.135		20	4.797		55	2.985
25	0	9.728		10	10.031		40	7.041		25	4.726		60	2.846
	5	12.963		15	9.851		45	6.934		30	4.732		65	2.836
	10	13.028		20	9.719		50	6.798		35	4.688		70	2.546
	15	12.726		25	9.522		55	6.532		40	4.646		75	2.410
	20	12.487		30	9.479		60	6.005		45	4.604		80	2.093
	25	12.161		35	9.308		65	5.710		50	4.561		85	2.135
30	0	9.465		40	9.126	70	0	4.659		55	4.455		90	2.042
	5	12.609		45	8.895		5	6.076		60	4.180	95	0	1.836
	10	12.684		50	8.607		10	6.162		65	4.072		5	2.329
	15	12.403	55	0	6.903		15	6.082		70	3.529		10	2.372
	20	12.183		5	9.132		20	6.029		75	3.252		15	2.357
	25	11.879		10	9.234		25	5.930		80	2.755		20	2.354
	30	11.754		15	9.079		30	5.929	85	0	3.252		25	2.327
35	0	9.003		20	8.908		35	5.861		5	4.164		30	2.334
	5	11.934		25	8.796		40	5.794		10	4.236		35	2.323
	10	12.068		30	8.768		45	5.720		15	4.195		40	2.312
	15	11.812		35	8.626		50	5.630		20	4.173		45	2.301
	20	11.616		40	8.478		55	5.441		25	4.114		50	2.294
	25	11.341		45	8.300		60	5.042		30	4.123		55	2.290
	30	11.238		50	8.062		65	4.833		35	4.090		60	2.280
	35	10.970		55	7.649		70	4.116		40	4.058		65	2.217
40	0	8.508	60	0	6.080	75	0	4.320		45	4.028		70	2.029
	5	11.315		5	8.026		5	5.617		50	4.002		75	1.959
	10	11.403		10	8.124		10	5.702		55	3.936		80	1.733
	15	11.174		15	7.998		15	5.633		60	3.717		85	1.738
	20	11.000		20	7.908		20	5.589		65	3.665		90	1.731
	25	10·753		25	7.764		25	5.501		70	3.217		95	1.378

Present Value of £1 per Annum during the joint Continuance of Two Lives (Male and Female) Male the Younger.

(Chester 5 per Cent.)

Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.	Ages.		Value of the Annuity.
Female.	Male.		Female.	Male.		Female.	Male.		Female.	Male.		Female.	Male.	
0	0	7.498	40	30	11.109	60	30	8.343	75	30	5.363	85	75	3.109
5	0	9.956		35	10.669		35	8.118		35	5.267		80	2.832
	5	13.942		40	10.181		40	7.859		40	5.150		85	2.632
10	0	9.974	45	0	8.056		45	7.597		45	5.035	90	0	1.712
	5	13.969		5	11.269		50	7.304		50	4.912		5	3.570
	10	14.172		10	11.510		55	6.933		55	4.763		10	3.675
15	0	9.711		15	11.235		60	6.284		60	4.405		15	3.638
	5	13.600		20	11.027	65	0	5.593		65	4.329		20	3.606
	10	13.808		25	10.863		5	7.730		70	3.743		25	3.587
	15	13.384		30	10.697		10	7.934		75	3.600		30	3.601
20	0	9.493		35	10.304		15	7.792	80	0	3.723		35	3.563
	5	13.293		40	9.861		20	7.693		5	4.360		40	3.511
	10	13.508		45	9.408		25	7.631		10	4.481		45	3.460
	15	13.105	50	0	7.609		30	7.599		15	4.420		50	3.412
	20	12.781		5	10.631		35	7.420		20	4.376		55	3.364
25	0	9.310		10	10.871		40	7.209		25	4.350		60	3.169
	5	12.893		15	10.627		45	7.001		30	4.352		65	3.178
	10	13.112		20	10.450		50	6.769		35	4.286		70	2.831
	15	12.735		25	10.311		55	6.478		40	4.197		75	2.757
	20	12.412		30	10.183		60	5.913		45	4.114		80	2.553
	25	12.161		35	9.839		65	5.710		50	4.023		85	2.420
30	0	9.051		40	9.451	70	0	4.527		55	3.916		90	2.042
	5	12.676		45	9.053		5	6.204		60	3.646	95	0	1.719
	10	12.905		50	8.607		10	6.374		65	3.588		5	2.221
	15	12.547	55	0	7.000		15	6.271		70	3.139		10	2.282
	20	12.264		5	9.754		20	6.197		75	3.024		15	2.268
	25	12.012		10	9.987		25	6.154		80	2.755		20	2.239
	30	11.754		15	9.778		30	6.141	85	0	3.243		25	2.241
35	0	8.754		20	9.630		35	6.016		5	4.386		30	2.251
	5	12.259		25	9.521		40	5.866		10	4.515		35	2.237
	10	12.493		30	9.429		45	5.718		15	4.455		40	2.214
	15	12.161		35	9.144		50	5.558		20	4.415		45	2.192
	20	11.904		40	8.817		55	5.354		25	4.387		50	2.167
	25	11.679		45	8.486		60	4.931		30	4.396		55	2.160
	30	11.448		50	8.110		65	4.802		35	4.332		60	2.056
	35	10.970		55	7.649		70	4.116		40	4.247		65	2.080
40	0	8.431	60	0	6.163	75	0	3.960		45	4.171		70	1.909
	5	11.803		5	8.558		5	5.390		50	4.092		75	1.868
	10	12.041		10	8.773		10	5.540		55	3.994		80	1.764
	15	11.737		15	8.601		15	5.459		60	3.727		85	1.705
	20	11.505		20	8.482		20	5.400		65	3.689		90	1.504
	25	11.308		25	8.402		25	5.365		70	3.216		95	1.378

TABLE XXIV.

Showing, out of the Number entering upon any Year, the Proportion which die in that Year or survive it, according to the Carlisle Rate of Mortality.

Age.	Proportion which die.	Proportion which survive.	Reciprocal of ditto.	Age.	Proportion which die.	Proportion which survive.	Reciprocal of ditto.
0	.153900	.846100	1.18189	52	.015201	.984799	1.01544
1	.080605	.919395	1.08767	53	.016148	.983852	1.01641
2	.064918	.935082	1.06942	54	.016896	.983104	1.01719
3	.037943	.962057	1.03944	55	.017923	.982077	1.01825
4	.028723	.971277	1.02957	56	.019000	.981000	1.01937
5	.017802	.982198	1.01812	57	.020897	.979103	1.02134
6	.012283	.987717	1.01244	58	.024206	.975794	1.02481
7	.008796	.991204	1.00887	59	.028274	.971726	1.02910
8	.006579	.993421	1.00662	60	.033489	.966511	1.03465
9	.005082	.994918	1.00511	61	.035785	.964215	1.03711
10	.004489	.995511	1.00451	62	.037408	.962592	1.03886
11	.004820	.995180	1.00484	63	.038250	.961750	1.03977
12	.005000	.995000	1.00503	64	.039771	.960229	1.04142
13	.005182	.994818	1.00521	65	.041087	.958913	1.04285
14	.005525	.994475	1.00556	66	.042502	.957498	1.04439
15	.006191	.993809	1.00623	67	.044388	.955612	1.04645
16	.006708	.993292	1.00675	68	.046450	.953550	1.04871
17	.006914	.993086	1.00696	69	.049109	.950891	1.05165
18	.006962	.993038	1.00701	70	.051645	.948355	1.05446
19	.007011	.992989	1.00706	71	.058849	.941151	1.06253
20	.007061	.992939	1.00711	72	.068129	.931871	1.07311
21	.006946	.993054	1.00699	73	.078117	.921883	1.08474
22	.006994	.993006	1.00704	74	.090168	.909832	1.09910
23	.007043	.992957	1.00709	75	.095522	.904478	1.10561
24	.007093	.992907	1.00714	76	.102970	.897030	1.11479
25	.007314	.992686	1.00736	77	.107432	.892568	1.12036
26	.007368	.992632	1.00742	78	.108821	.891179	1.12211
27	.007768	.992232	1.00783	79	.118409	.881591	1.13431
28	.008699	.991301	1.00878	80	.121721	.878279	1.13859
29	.009828	.990172	1.00993	81	.133811	.866189	1.15448
30	.010103	.989897	1.01021	82	.140690	.859310	1.16372
31	.010206	.989794	1.01031	83	.150883	.849117	1.17769
32	.010130	.989870	1.01023	84	.158790	.841210	1.18876
33	.010051	.989949	1.01015	85	.175281	.824719	1.21253
34	.010153	.989847	1.01026	86	.193461	.806539	1.23987
35	.010257	.989743	1.01036	87	.216216	.783784	1.27586
36	.010552	.989448	1.01066	88	.219828	.780172	1.28177
37	.010855	.989145	1.01097	89	.215470	.784530	1.27465
38	.011167	.988833	1.01129	90	.260563	.739437	1.35238
39	.011877	.988123	1.01202	91	.285714	.714286	1.40000
40	.013005	.986995	1.01318	92	.280000	.720000	1.38889
41	.013775	.986225	1.01397	93	.259259	.740741	1.35000
42	.014373	.985627	1.01458	94	.250000	.750000	1.33333
43	.014582	.985418	1.01480	95	.233333	.766667	1.30435
44	.014798	.985202	1.01502	96	.217391	.782609	1.27778
45	.014809	.985191	1.01503	97	.222222	.777778	1.28571
46	.014816	.985184	1.01504	98	.214286	.785714	1.27273
47	.014603	.985397	1.01482	99	.181818	.818182	1.22222
48	.013935	.986065	1.01413	100	.222222	.777778	1.28571
49	.013683	.986317	1.01387	101	.285714	.714286	1.40000
50	.013418	.986582	1.01360	102	.400000	.600000	1.66667
51	.014292	.985708	1.01450	103	.666666	.333334	3.00000

TABLE XXV.

The Logarithm and its Arithmetical Complement of the Fraction which measures the Probability that a Life of an assigned Age will survive One Year, according to the Carlisle Table of Mortality.

Age.	Logarithm.	Arithmetical Complement of ditto.	Age.	Logarithm.	Arithmetical Complement of ditto.
0	$\bar{1}$.9274217	0.0725783	52	$\bar{1}$.9933475	0.0066525
1	.9635021	0.0364979	53	.9929297	.0070703
2	.9708495	.0291505	54	.9925995	.0074005
3	.9832006	.0167994	55	.9921456	.0078544
4	.9873434	.0126566	56	.9916690	.0083310
5	.9921990	.0078010	57	.9908284	.0091716
6	.9946326	.0053674	58	.9893580	.0106420
7	.9961631	.0038369	59	.9875438	.0124562
8	.9971334	.0028666	60	.9852068	.0147932
9	.9977871	.0022129	61	.9841738	.0158262
10	.9980460	.0019540	62	.9834422	.0165578
11	.9979015	.0020985	63	.9830624	.0169376
12	.9978230	.0021770	64	.9823748	.0176252
13	.9977436	.0022564	65	.9817793	.0182207
14	.9975939	.0024061	66	.9811380	.0188620
15	.9973032	.0026968	67	.9802815	.0197185
16	.9970769	.0029231	68	.9793434	.0206566
17	.9969867	.0030133	69	.9781308	.0218692
18	.9969657	.0030343	70	.9769708	.0230292
19	.9969443	.0030557	71	.9736592	.0263408
20	.9969227	.0030773	72	.9693559	.0306441
21	.9969730	.0030270	73	.9646757	.0353243
22	.9969518	.0030482	74	.9589610	.0410390
23	.9969303	.0030697	75	.9563978	.0436022
24	.9969084	.0030916	76	.9528069	.0471931
25	.9968118	.0031882	77	.9506413	.0493587
26	.9967882	.0032118	78	.9499649	.0500351
27	.9966133	.0033867	79	.9452672	.0547328
28	.9962056	.0037944	80	.9436326	.0563674
29	.9957107	.0042893	81	.9376125	.0623875
30	.9955901	.0044099	82	.9341500	.0658500
31	.9955448	.0044552	83	.9289677	.0710323
32	.9955781	.0044219	84	.9249043	.0750957
33	.9956127	.0043873	85	.9163061	.0836939
34	.9955680	.0044320	86	.9066256	.0933744
35	.9955223	.0044777	87	.8941963	.1058037
36	.9953929	.0046071	88	.8921906	.1078094
37	.9952599	.0047401	89	.8946097	.1053903
38	.9951231	.0048769	90	.8689010	.1310990
39	.9948110	.0051890	91	.8538720	.1461280
40	.9943150	.0056850	92	.8573325	.1426675
41	.9939759	.0060241	93	.8696662	.1303338
42	.9937129	.0062871	94	.8750613	.1249387
43	.9936204	.0063796	95	.8846065	.1153935
44	.9935254	.0064746	96	.8935447	.1064553
45	.9935206	.0064794	97	.8908555	.1091445
46	.9935172	.0064828	98	.8952647	.1047353
47	.9936111	.0063889	99	.9128498	.0871502
48	.9939056	.0060944	100	.8908555	.1091445
49	.9940164	.0059836	101	.8538720	.1461280
50	.9941330	.0058670	102	.7781513	.2218487
51	.9937482	.0062518	103	.5228787	.4771213

Showing the Probabilities of Survivorship between every Two Lives whereof the Difference of Age is either Ten Years or any multiple of Ten, according to the Carlisle Table of Mortality.

Difference Ten Years.

Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	10	.5834	.4166	48	58	.3174	.6826
1	11	.5103	.4897	49	59	.3156	.6844
2	12	.4699	.5301	50	60	.3152	.6848
3	13	.4354	.5646	51	61	.3167	.6833
4	14	.4154	.5846	52	62	.3185	·6815
5	15	.4004	.5996	53	63	.3202	.6798
6	16	.3920	.6080	54	64	.3217	.6783
7	17	.3871	.6129	55	65	.3232	.6768
8	18	.3844	.6156	56	66	.3246	.6754
9	19	.3830	.6170	57	67	.3258	.6742
10	20	.3825	.6175	58	68	.3264	.6736
11	21	.3825	.6175	59	69	.3253	.6747
12	22	.3821	.6179	60	70	.3222	.6778
13	23	.3817	.6183	61	71	.3160	.6840
14	24	.3812	.6188	62	72	.3099	.6901
15	25	.3805	.6195	63	73	.3052	.6948
16	26	.3794	.6206	64	74	.3028	.6972
17	27	.3780	.6220	65	75	.3031	.6969
18	28	.3767	.6233	66	76	.3044	.6956
19	29	.3756	.6244	67	77	.3074	.6926
20	30	.3749	.6251	68	78	.3112	.6888
21	31	.3743	.6257	69	79	.3145	.6855
22	32	.3737	.6263	70	80	.3201	.6799
23	33	.3732	.6268	71	81	.3261	.6739
24	34	.3725	.6275	72	82	.3326	.6674
25	35	.3718	.6282	73	83	.3363	.6637
26	36	.3710	.6290	74	84	.3373	.6627
27	37	.3703	.6297	75	85	.3323	.6677
28	38	.3694	.6306	76	86	.3286	.6714
29	39	.3681	.6319	77	87	.3256	.6744
30	40	.3662	.6338	78	88	.3285	.6715
31	41	.3645	.6355	79	89	.3331	.6669
32	42	.3630	.6370	80	90	.3289	.6711
33	43	.3618	.6382	81	91	.3434	.6566
34	44	.3607	.6393	82	92	.3697	.6303
35	45	.3595	.6405	83	93	.4020	.5980
36	46	.3582	.6418	84	94	.4304	.5696
37	47	.3568	.6432	85	95	.4619	.5381
38	48	.3550	.6450	86	96	.4857	.5143
39	49	.3527	.6473	87	97	.4963	.5037
40	50	.3498	.6502	88	98	.4989	.5011
41	51	.3459	.6541	89	99	.4937	.5063
42	52	.3418	.6582	90	100	.4640	.5360
43	53	.3374	.6626	91	101	.4041	.5959
44	54	.3331	.6669	92	102	.3120	.6880
45	55	.3288	.6712	93	103	.2037	.7963
46	56	.3246	.6754	94	104	.1250	.8750
47	57	.3207	.6793				

TABLE XXVI.

Showing the Probabilities of Survivorship between every Two Lives whereof the Difference of Age is either Ten Years or any multiple of Ten, according to the Carlisle Table of Mortality.

Difference Twenty Years.

Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	20	.5182	.4818	43	63	.2019	.7981
1	21	.4343	.5657	44	64	.1979	.8021
2	22	.3877	.6123	45	65	.1939	.8061
3	23	.3479	.6521	46	66	.1899	.8101
4	24	.3246	.6754	47	67	.1859	.8141
5	25	.3069	.6931	48	68	.1823	.8177
6	26	.2966	.7034	49	69	.1794	.8206
7	27	.2900	.7100	50	70	.1770	.8230
8	28	.2860	.7140	51	71	.1752	.8248
9	29	.2837	.7163	52	72	.1739	.8261
10	30	.2829	.7171	53	73	.1735	.8265
11	31	.2825	.7175	54	74	.1742	.8258
12	32	.2819	.7181	55	75	.1767	.8233
13	33	.2812	.7188	56	76	.1797	.8203
14	34	.2803	.7197	57	77	.1838	.8162
15	35	.2792	.7208	58	78	.1877	.8123
16	36	.2776	.7224	59	79	.1895	.8105
17	37	.2756	.7244	60	80	.1901	.8099
18	38	.2736	.7264	61	81	.1869	.8131
19	39	.2716	.7284	62	82	.1838	.8162
20	40	.2697	.7303	63	83	.1802	.8198
21	41	.2680	.7320	64	84	.1774	.8226
22	42	.2666	.7334	65	85	.1742	.8258
23	43	.2653	.7347	66	86	.1729	.8271
24	44	.2640	.7360	67	87	.1742	.8258
25	45	.2627	.7373	68	88	.1797	.8203
26	46	.2612	.7388	69	89	.1860	.8140
27	47	.2596	.7404	70	90	.1906	.8094
28	48	.2576	.7424	71	91	.2078	.7922
29	49	.2547	.7453	72	92	.2340	.7660
30	50	.2508	.7492	73	93	.2615	.7385
31	51	.2465	.7535	74	94	.2834	.7166
32	52	.2423	.7577	75	95	.2997	.7003
33	53	.2383	.7617	76	96	.3105	.6895
34	54	.2344	.7656	77	97	.3115	.6885
35	55	.2305	.7695	78	98	.3043	.6957
36	56	.2267	.7733	79	99	.2958	.7042
37	57	.2228	.7772	80	100	.2609	.7391
38	58	.2190	.7810	81	101	.2236	.7764
39	59	.2155	.7845	82	102	.1760	.8240
40	60	.2122	.7878	83	103	.1231	.8769
41	61	.2091	.7909	84	104	.0794	.9206
42	62	.2056	.7944				

Showing the Probabilities of Survivorship between every Two Lives whereof the Difference of Age is either Ten Years or any multiple of Ten; according to the Carlisle Table of Mortality.

Difference Thirty Years.

Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	30	.4672	.5328	38	68	.1335	.8665
1	31	.3750	.6250	39	69	.1300	.8700
2	32	.3239	.6761	40	70	.1260	.8740
3	33	.2802	.7198	41	71	.1211	.8789
4	34	.2546	.7454	42	72	.1161	.8839
5	35	.2351	.7649	43	73	.1112	.8888
6	36	.2236	.7764	44	74	.1070	.8930
7	37	.2163	.7837	45	75	.1036	.8964
8	38	.2117	.7883	46	76	.1005	.8995
9	39	.2088	.7912	47	77	.0978	.9022
10	40	.2073	.7927	48	78	.0955	.9045
11	41	.2064	.7936	49	79	.0936	.9064
12	42	.2054	.7946	50	80	.0929	.9071
13	43	.2044	.7956	51	81	.0927	.9073
14	44	.2033	.7967	52	82	.0929	.9071
15	45	.2019	.7981	53	83	.0931	.9069
16	46	.1999	.8001	54	84	.0936	.9064
17	47	.1975	.8025	55	85	.0943	.9057
18	48	.1948	.8052	56	86	.0963	.9037
19	49	.1919	.8081	57	87	.1000	.9000
20	50	.1888	.8112	58	88	.1060	.8940
21	51	.1855	.8145	59	89	.1110	.8890
22	52	.1825	.8175	60	90	.1125	.8875
23	53	.1795	.8205	61	91	.1166	.8834
24	54	.1766	.8234	62	92	.1248	.8752
25	55	.1737	.8263	63	93	.1336	.8664
26	56	.1708	.8292	64	94	.1408	.8592
27	57	.1679	.8321	65	95	.1472	.8528
28	58	.1649	.8351	66	96	.1509	.8491
29	59	.1616	.8384	67	97	.1508	.8492
30	60	.1579	.8421	68	98	.1498	.8502
31	61	.1546	.8454	69	99	.1445	.8555
32	62	.1515	.8485	70	100	.1284	.8716
33	63	.1486	.8514	71	101	.1119	.8881
34	64	.1457	.8543	72	102	.0914	.9086
35	65	.1428	.8572	73	103	.0659	.9341
36	66	.1399	.8601	74	104	.0451	.9549
37	67	.1368	.8632				

howing the Probabilities of Survivorship between every Two Lives whereof the Difference of Age is either Ten Years or any Multiple of Ten, according to the Carlisle Table of Mortality.

Difference Forty Years.

Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	40	.4258	.5742	33	73	.0853	.9147
1	41	.3268	.6732	34	74	.0829	.9171
2	42	.2721	.7279	35	75	.0813	.9187
3	43	.2253	.7747	36	76	.0799	.9201
4	44	.1980	.8020	37	77	.0788	.9212
5	45	.1771	.8229	38	78	.0776	.9224
6	46	.1648	.8352	39	79	.0761	.9239
7	47	.1568	.8432	40	80	.0745	.9255
8	48	.1516	.8484	41	81	.0719	.9281
9	49	.1481	.8519	42	82	.0691	.9309
10	50	.1457	.8543	43	83	.0658	.9342
11	51	.1438	.8562	44	84	.0625	.9375
12	52	.1418	.8582	45	85	.0590	.9410
13	53	.1396	.8604	46	86	.0560	.9440
14	54	.1374	.8626	47	87	.0536	.9464
15	55	.1349	.8651	48	88	.0526	.9474
16	56	.1320	.8680	49	89	.0522	.9478
17	57	.1286	.8714	50	90	.0517	.9483
18	58	.1252	.8748	51	91	.0549	.9451
19	59	.1221	.8779	52	92	.0605	.9395
20	60	.1194	.8806	53	93	.0669	.9331
21	61	.1172	.8828	54	94	.0726	.9274
22	62	.1153	.8847	55	95	.0784	.9216
23	63	.1134	.8866	56	96	.0831	.9169
24	64	.1115	.8885	57	97	.0862	.9138
25	65	.1097	.8903	58	98	.0888	.9112
26	66	.1077	.8923	59	99	.0876	.9124
27	67	.1057	.8943	60	100	.0778	.9222
28	68	.1035	.8965	61	101	.0640	.9360
29	69	.1005	.8995	62	102	.0483	.9517
30	70	.0965	.9035	63	103	.0319	.9681
31	71	.0924	.9076	64	104	.0199	.9801
32	72	.0885	.9115				

Showing the Probabilities of Survivorship between every Two Lives whereof the Difference of Age is either Ten Years or any Multiple of Ten, according to the Carlisle Table of Mortality.

Difference Fifty Years.

Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	50	.3921	.6079	28	78	.0596	.9404
1	51	.2866	.7134	29	79	.0582	.9418
2	52	.2280	.7720	30	80	.0560	.9440
3	53	.1963	.8037	31	81	.0535	.9465
4	54	.1479	.8521	32	82	.0513	.9487
5	55	.1250	.8750	33	83	.0493	.9507
6	56	.1113	.8887	34	84	.0476	.9524
7	57	.1023	.8977	35	85	.0459	.9541
8	58	.0965	.9035	36	86	.0448	.9552
9	59	.0928	.9072	37	87	.0442	.9558
10	60	.0908	.9092	38	88	.0445	.9555
11	61	.0898	.9102	39	89	.0448	.9552
12	62	.0887	.9113	40	90	.0441	.9559
13	63	.0875	.9125	41	91	.0449	.9551
14	64	.0861	.9139	42	92	.0470	.9530
15	65	.0845	.9155	43	93	.0488	.9512
16	66	.0823	.9177	44	94	.0495	.9505
17	67	.0796	.9204	45	95	.0494	.9506
18	68	.0768	.9232	46	96	.0482	.9518
19	69	.0739	.9261	47	97	.0453	.9547
20	70	.0710	.9290	48	98	.0422	.9578
21	71	.0681	.9319	49	99	.0384	.9616
22	72	.0657	.9343	50	100	.0322	.9678
23	73	.0637	.9363	51	101	.0264	.9736
24	74	.0622	.9378	52	102	.0202	.9798
25	75	.0613	.9387	53	103	.0135	.9865
26	76	.0605	.9395	54	104	.0084	.9916
27	77	.0601	.9399				

TABLE XXVI.

Showing the Probabilities of Survivorship between every Two Lives, whereof the Difference of Age is either Ten Years or any Multiple of Ten, according to the Carlisle Table of Mortality.

Difference Sixty Years.				Difference Seventy Years.			
Age of		Probability of A dying before B.	Probability of B dying before A.	Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.			A.	B.		
0	60	.3521	.6479	0	70	.3198	.6802
1	61	.2456	.7544	1	71	.2117	.7883
2	62	.1877	.8123	2	72	.1543	.8457
3	63	.1378	.8622	3	73	.1051	.8949
4	64	.1087	.8913	4	74	.0774	.9226
5	65	.0864	.9136	5	75	.0565	.9435
6	66	.0732	.9268	6	76	.0445	.9555
7	67	.0647	.9353	7	77	.0371	.9629
8	68	.0592	.9408	8	78	.0325	.9675
9	69	.0557	.9443	9	79	.0297	.9703
10	70	.0536	.9464	10	80	.0284	.9716
11	71	.0522	.9478	11	81	.0277	.9723
12	72	.0507	.9493	12	82	.0269	.9731
13	73	.0495	.9505	13	83	.0260	.9740
14	74	.0485	.9515	14	84	.0252	.9748
15	75	.0478	.9522	15	85	.0240	.9760
16	76	.0466	.9534	16	86	.0224	.9776
17	77	.0452	.9548	17	87	.0204	.9796
18	78	.0436	.9561	18	88	.0182	.9818
19	79	.0418	.9582	19	89	.0156	.9844
20	80	.0403	.9597	20	90	.0119	.9881
21	81	.0386	.9614	21	91	.0079	.9921
22	82	.0373	.9627	22	92	.0027	.9973
23	83	.0361	.9639	23	93	.0265	.9735
24	84	.0351	.9649	24	94	.0277	.9723
25	85	.0342	.9658	25	95	.0288	.9712
26	86	.0336	.9664	26	96	.0294	.9706
27	87	.0337	.9663	27	97	.0294	.9706
28	88	.0344	.9656	28	98	.0291	.9709
29	89	.0345	.9655	29	99	.0274	.9726
30	90	.0331	.9669	30	100	.0228	.9772
31	91	.0333	.9667	31	101	.0180	.9820
32	92	.0347	.9653	32	102	.0131	.9869
33	93	.0364	.9636	33	103	.0084	.9916
34	94	.0378	.9622	34	104	.0051	.9949
35	95	.0389	.9611				
36	96	.0393	.9607				
37	97	.0386	.9614				
38	98	.0377	.9623				
39	99	.0356	.9644				
40	100	.0307	.9693				
41	101	.0250	.9750				
42	102	.0187	.9813				
43	103	.0121	.9879				
44	104	.0074	.9926				

TABLE XXVI.

Showing the Probabilities of Survivorship between every Two Lives, whereof the Difference of Age is either Ten Years or any Multiple of Ten, according to the Carlisle Table of Mortality.

Difference Eighty Years.

Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.		
0	80	.2758	.7242
1	81	.1767	.8233
2	82	.1274	.8726
3	83	.0835	.9165
4	84	.0592	.9408
5	85	.0402	.9598
6	86	.0295	.9705
7	87	.0231	.9769
8	88	.0197	.9803
9	89	.0178	.9822
10	90	.0170	.9830
11	91	.0178	.9822
12	92	.0193	.9807
13	93	.0209	.9791
14	94	.0223	.9777
15	95	.0234	.9766
16	96	.0235	.9765
17	97	.0226	.9774
18	98	.0212	.9788
19	99	.0192	.9808
20	100	.0158	.9842
21	101	.0124	.9876
22	102	.0091	.9909
23	103	.0059	.9941
24	104	.0035	.9965

Difference Ninety Years.

Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.		
0	90	.2192	.7808
1	91	.1365	.8635
2	92	.1027	.8973
3	93	.0695	.9305
4	94	.0512	.9488
5	95	.0358	.9642
6	96	.0267	.9733
7	97	.0204	.9796
8	98	.0164	.9836
9	99	.0134	.9866
10	100	.0108	.9892
11	101	.0088	.9912
12	102	.0066	.9934
13	103	.0044	.9956
14	104	.0028	.9972

Difference One Hundred Years.

Age of		Probability of A dying before B.	Probability of B dying before A.
A.	B.		
0	100	.2120	.7880
1	101	.1142	.8858
2	102	.0687	.9313
3	103	.0299	.9701
4	104	.0144	.9856